FEBRUARY | 1957

products finishing

FINISHES ON METAL PRODUCTS

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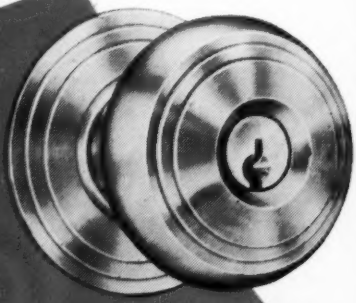

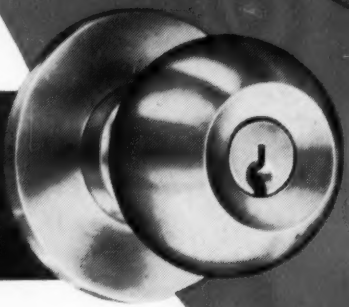

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Bronze using Lea C
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Here's a beautiful line of modern locks . . . LEA SATIN FINISHED for consumer eye appeal. It's a finish that's economical to produce. It's a finish that's extremely durable in hard use. It's a finish that's modern. It may be just the finish for your product.

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2	16	30	44	58	72	86	100	114	128	142	156	169	182	195	208	221	234	247	260
3	17	31	45	59	73	87	101	115	129	143	157	170	183	196	209	222	235	248	261
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5	19	33	47	61	75	89	103	117	131	145	159	172	185	198	211	224	237	250	263
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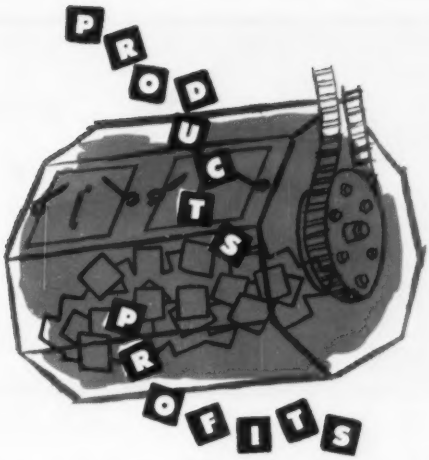

Here's an exciting new game:

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One of the greatest money-saving opportunities in metal-working lies in the use of barrels to finish parts by the hundreds in place of conventional methods that finish one part at a time.

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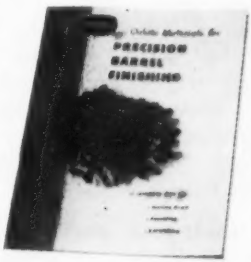

FREE For a copy of "*Precision Barrel Finishing*"—containing valuable information on cutting down, deburring, descaling, and burnishing—write to Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

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Norton ALUNDUM* Tumblex "S" Spheres

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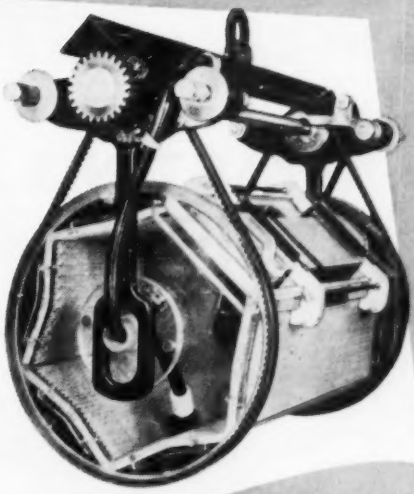
From **H-VW-M** comes

The New Mercil-Type belt driven

PLATING BARREL



MINIMUM MAINTENANCE
—New design cuts down-time, saves on replacements.

MAXIMUM VERSATILITY
—Plates in all solutions, rotates in any Mercil tank.

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—Long life assured by job-tested features.

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- Motor available hanger mounted, or direct drive—allowing complete interchangeability of barrels on all Mercil-type equipment.
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All plating plants, and particularly job plating shops, will do more profitable plating with any one of the twelve new Mercil-type belt driven barrels. Get *more* production from your present tanks —*cut* maintenance time to a minimum—save on all belt replacements.
Write for catalog—today.

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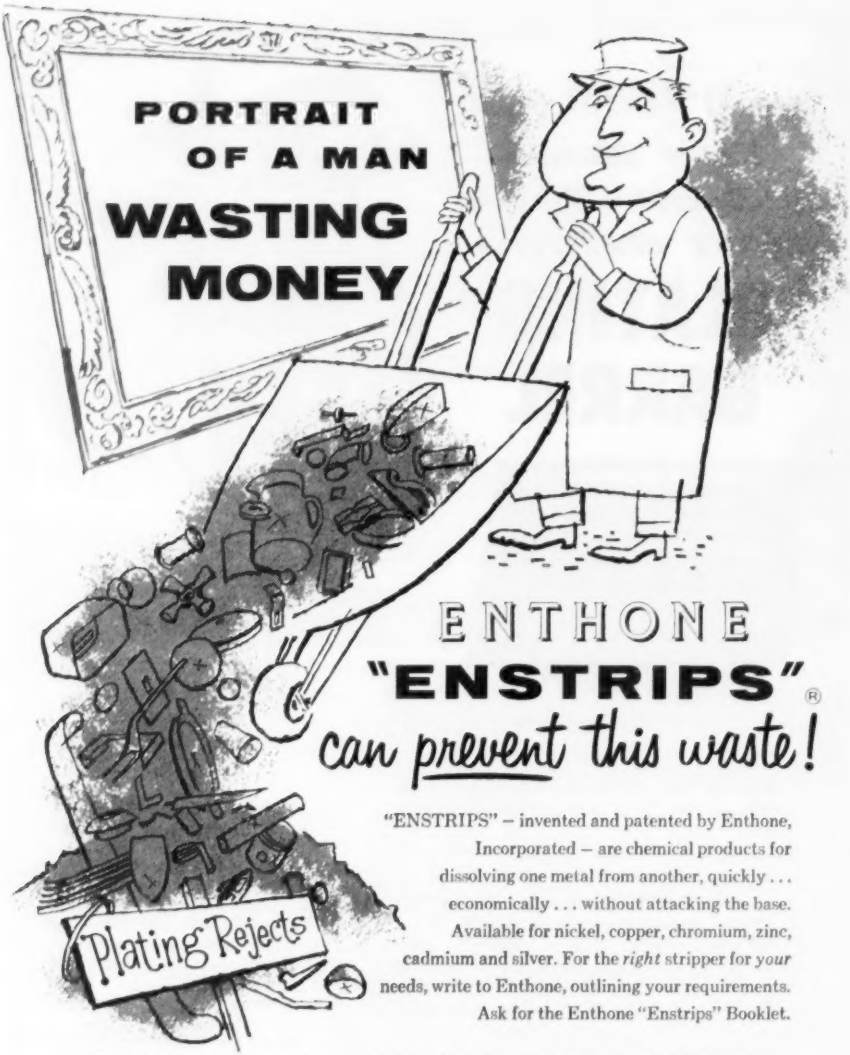

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products finishing

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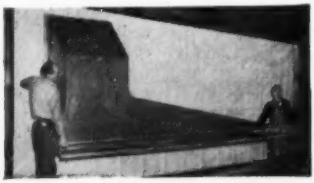
HAVEG News

Wherever CORROSION RESISTANCE is a Factor

HAVEG FUME SYSTEMS RESIST WIDE RANGE OF CORROSIVE ATMOSPHERES



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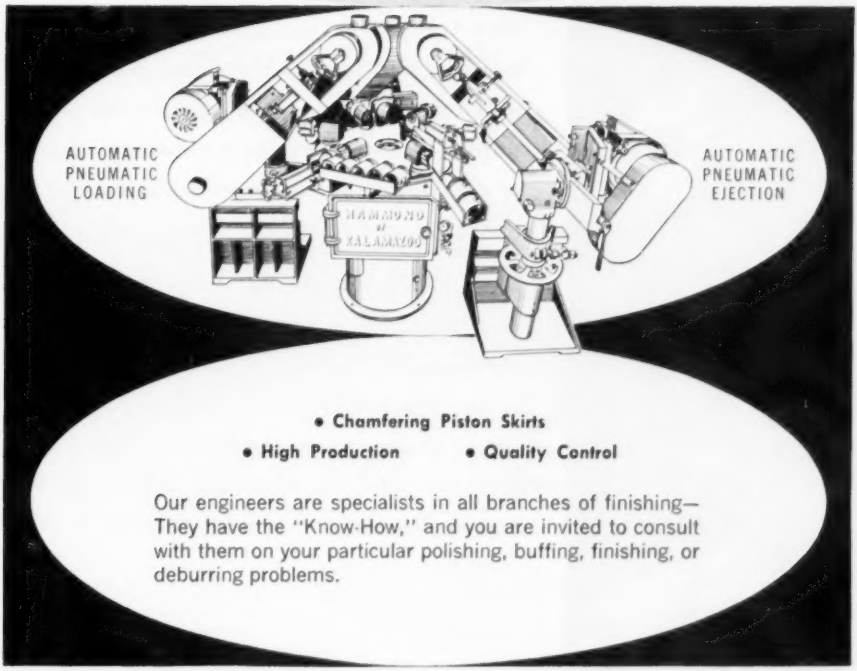

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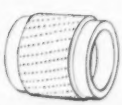

Other parts are being "Automated" on Hammond Automatics.

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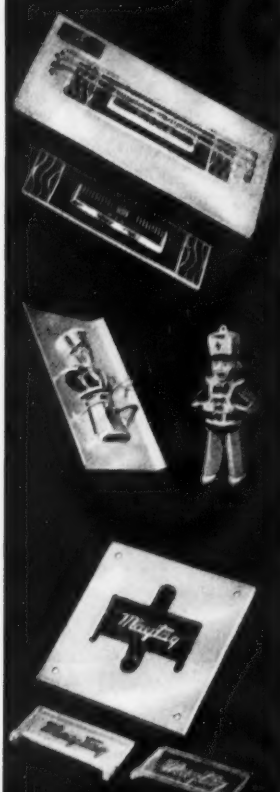

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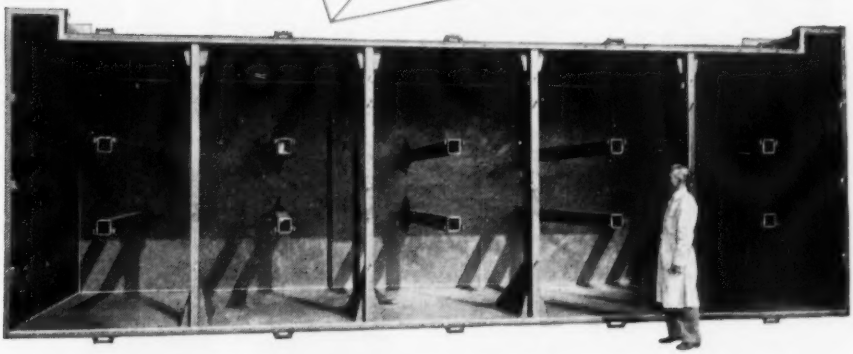
SPRAY S-2003

helps *Udylite* break another size barrier!



30' x 9' x 9' 4" plating tank lined by Udylite with Miccrosol Spray S-2003.

Another size barrier in the coating industry was broken when this 11½-ton plating tank was lined with a 3/16"-3/8" coat of Miccrosol Spray S-2003. The combination of Udylite's efficient 31-foot oven and Miccrosol Spray S-2003 made it possible.

The tank was placed in the oven, coated by spraying, and then cured. When removed, the job was complete.

Miccrosol Spray S-2003 was selected by Udylite for this job both because it could be applied under these unusual conditions and for its outstanding performance as a lining for plating tanks. This material, combined with their facilities, enabled them to turn out a top quality coating job which heretofore would have been impossible.

Write for complete information on your company letterhead.

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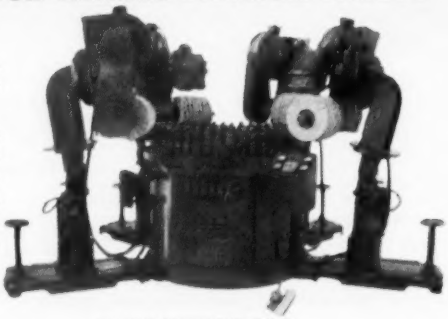
For handling long production runs, small odd-lot jobs or a mixture of both—Packer-Matics are easily adapted to many change-over setups, produce consistently better finishes in a fraction of hand operation time.

Packer-Matics are designed specifically to perform a multiplicity of jobs with an efficiency that will increase customer satisfaction and profit.



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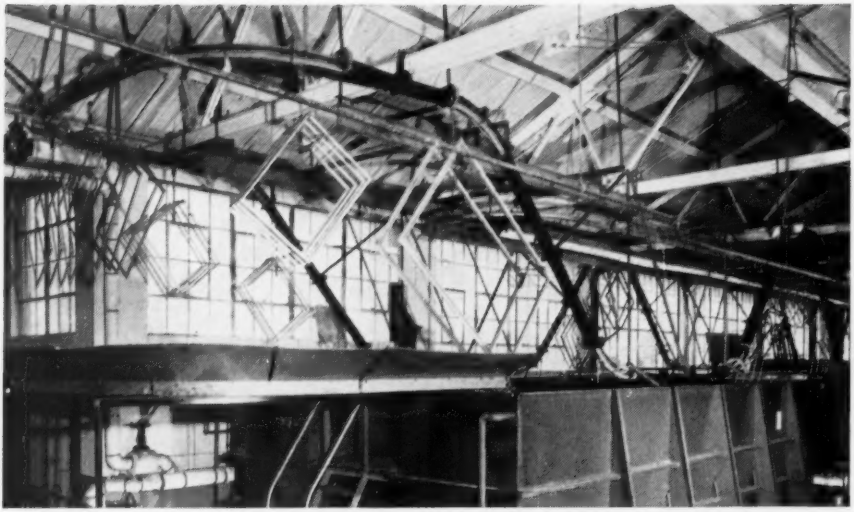

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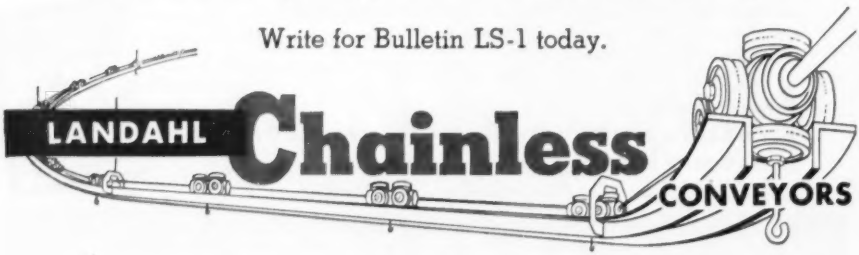

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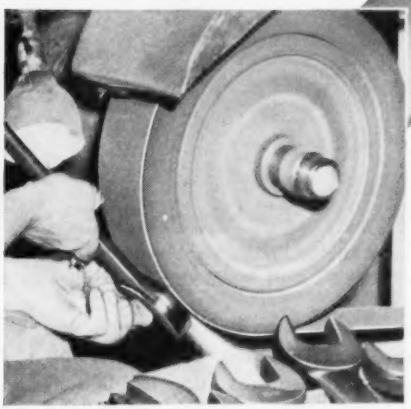
How would you solve it?

1 PRODUCTION PROBLEM: To speed production and cut unit costs of removing forged flash from steel open-end wrenches. Billings and Spencer found that hard wheels were too slow, left unsatisfactory finishes, tired operators.



2 SOLUTION: A 3M Representative studied this production problem. After careful analysis, he recommended that this Hartford, Connecticut manufacturer switch to the 3M Method using Three-M-ite type belts on a backstand grinder.

3 RESULTS: Better finishes. An immediate production increase of 140%—from 75 to 180 pieces per hour. Each belt finishes up to 150 pieces (then is used for *other* operations) with less operator fatigue. A 3M Representative can solve *your* problems, too.

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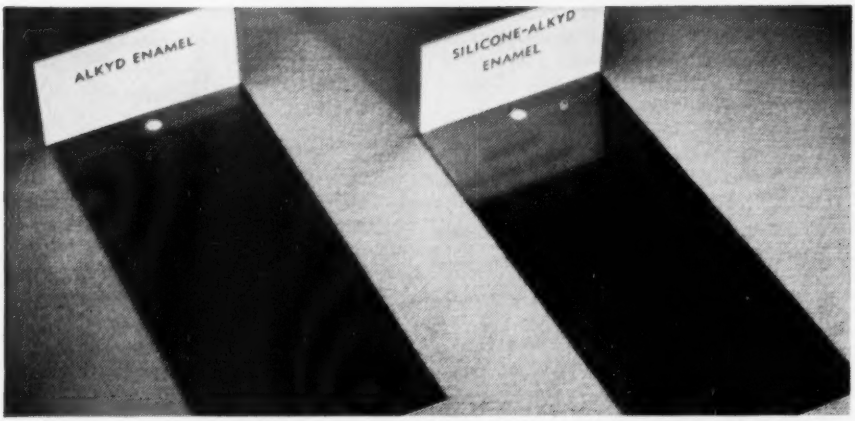
For greater weather resistance . . .

use Silicone Based Paints



Both test panels were exposed in a Weathermeter for 1000 hours; you can see how the silicone based finish on the right has retained its high gloss and mirror-smooth finish.

Here's visual proof of the extra measure of weather resistance you can expect from finishes based on Dow Corning silicone resins. Other advantages are stability at temperatures up to 500 F, depending on formulation; corrosion and mar resistance; color and gloss retention.

Your product will radiate more sales appeal and assure you longer lasting customer satisfaction with a Dow Corning silicone based finish.

LOW COST HAMMER EFFECTS are now easily obtained by specifying the addition of a special Dow Corning silicone fluid to your metallic finish. Full details on request.

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MINIMUM DRAGOUT! Automatic cam lift between tank-to-tank transfers eliminates solution dragout to absolute minimum regardless of shape or size of workpiece.

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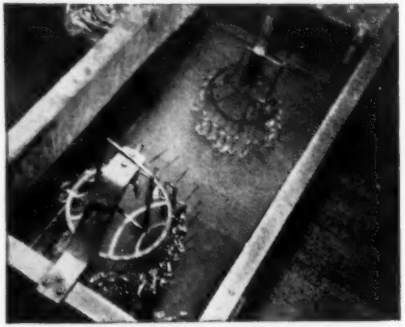
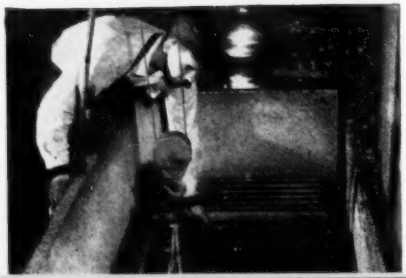
Vapor degreasers – manual or conveyor – show better production with TRICLENE® D



"Brighter cleaning... 50-75% longer between cleanouts"... *American Hardware*

The P. & F. Corbin and Russell & Erwin Divisions of the American Hardware Corp., New Britain, Conn., are well-known for their complete line of builders' hardware which includes locks and door fittings with highly polished surfaces of brass, bronze, copper, steel and zinc.

Since these two divisions began using "Triclene" D trichlorethylene exclusively in six conveyorized and three manual degreasers, they report: "Brighter cleaning . . . no necessity to wipe parts before lacquering." They also noted a steadier pH and that operations went 50 to 75% longer between cleanouts and that the coils were easier to clean.

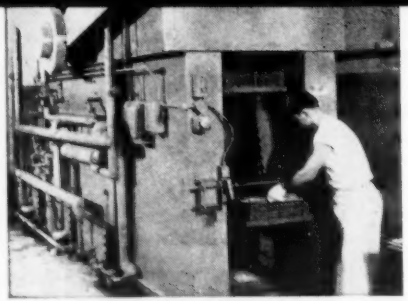


"Far fewer rejects from etching and staining on aluminum"... *Hecker Manufacturing Co.*

One of the big problems this San Francisco firm had to contend with was etching and staining on the highly polished surfaces of their aluminum shower and tub enclosures when the solvent formerly used developed a high acid content. This too fre-

of production from rejects and downtime.

"Since changing to 'Triclene' D," reports Mr. Cary, Plant Superintendent, "we've noticed a big reduction in the number of rejects, and solvent control is no problem at all. This adds up to real sav-



consistently high production"... *Standard-Thomson Co.*

When you make accessories for the aircraft, automotive and window-hardware industries, as does Standard-Thomson in Dayton, Ohio, your production lines must match theirs in speed and efficiency. Substandard work and downtime can be very costly indeed. And every operation *eliminated* speeds up production.

Here's what they report: "We haven't any concern about solvent condition since we started using 'Triclene' D. We've noticed a big reduction in the number of rejects due to etching, too. Moreover, we've eliminated bright dipping of brass parts and the time between degreaser cleanouts has been increased from two to six weeks."

Effects of heat, light, air, acids and aluminum chloride are resisted by "Triclene" D with its locked-in stabilizers. That's why it is so widely used for quick, efficient degreasing of all types of metals in so many industries.

Get all the facts on "Triclene" D. Send for this 42-page fact-packed illustrated book which gives you information on all phases and types of vapor degreasing operations. For your free copy, send coupon below.

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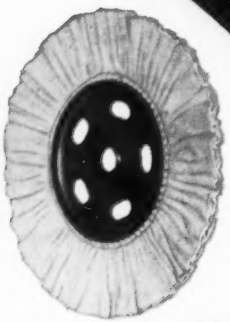

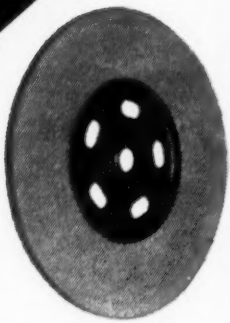

ZIPPO CLOTH BUFFS

These famous long-wearing buffs run cool under all buffing conditions. High count bias-cut cloth is assembled on ventilated steel centers. Each section is perfectly balanced and faced—requires no raking.

BUFFING COMPOUNDS

Formax produces a complete line of buffing compounds in bar, tube and liquid form.

Our extensive manufacturing, laboratory and testing facilities are at your disposal.

ZIPPO SISAL BUFFS

You have a pleasant surprise coming if you haven't tried the new Zippo bias-type sisal buff. It was specifically developed for steel buffing—to blend polishing grit lines—to cut down stainless steel—and bring up a bright lustre.

Other Formax products include the well-known C-20 Flexible Contact Wheels and F-26 Abrasive Belt Grease Stick.

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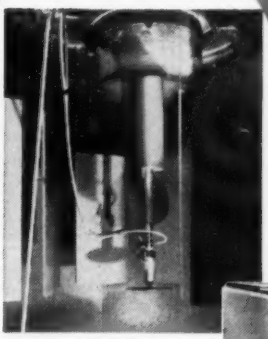
NO REASON WHY YOU CAN'T DO IT, TOO!



Typical of the Mueller Climatrol line is this summer air conditioner and gas-fired winter air conditioner, now uniformly painted electrostatically with RANSBURG NO. 2 PROCESS

MUELLER CLIMATROL,

Milwaukee, increases paint mileage 40% with

RANSBURG NO. 2 PROCESS

And, 10 men averaging 40 hours a week now do the work formerly handled by 24 men averaging 50 hours!

Painting used to be a bottleneck in the manufacture of heating and air conditioning equipment at Mueller Climatrol.

But not any more!

When Mueller modernized its finishing department—replacing hand spray with Ransburg No. 2 Process Electro-Spray—daily production was increased . . . finishing costs were cut . . . and quality of the work was improved.

Annually, Mueller coats over 10 million square feet of sheet metal, so a 40% increase in paint mileage—translated into paint dollars saved—is a sizeable figure. Pointing up other savings, a typical run of 400 furnace casings used to take 200 man hours to clean and hand spray. Mueller does it now in 60 hours!

NO REASON WHY YOU CAN'T DO IT, TOO!

Whatever your product, if your production justifies conveyorized painting, chances are one of the Ransburg Electro-Coating Processes can do it better, for less, with improved uniformity and quality of the work. Write for our new brochure which includes numerous examples of both large and small manufacturers of a variety of products who are enjoying the many advantages of *Ransburg Electrostatic Spray Painting.*

Ransburg **ELECTRO-COATING CORP.**

Indianapolis 7, Indiana

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Just hanging soiled metal parts in a tank of soak cleaner won't necessarily get them clean. You've got to be sure that the cleaner *gets into the soil.*

You *can* be sure with . . .

Cowles NS SOAK CLEANER

Cowles NS Soak Cleaner penetrates deep into crevices and recesses to wet-out crusty soil deposits. Emulsifies oil and grease. Disperses drawing, stamping and buffing compounds.

No scum on the cleaning tank to foul cleaned metal coming out. Clean it with Cowles NS Soak Cleaner and it stays clean.

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FEBRUARY, 1957

editorial . . . . .

Spotting Out — An Old Problem Is Still With Us

One of the first examples of the fact that electroplaters and paint finishers have common problems was "spotting out." This condition, which occurs under lacquers used to preserve electroplates of copper, oxidized copper, brass, silver or oxidized silver, is evidenced by black spots on the metal.

Researchers have long tried to solve the "spotting out" problem. Over the past several years some progress has been made. Special techniques, including intermediate buffing operations, a series of hot and cold water rinses, heating cycles and methods of lacquer application, have been devised to reduce "spotting out" in both frequency and amount. Special lacquers have been formulated to provide films with better resistance to "spotting out."

But the problem still persists. Recently it has become prominent again with the increased usage of copper and oxidized or "antique" copper finishes on kitchen appliances and other metal household furnishings.

When parts are plated in cyanide plating solutions, or when an oxidized finish is produced, the trouble seems to be more prevalent. Finishing castings is also difficult, since the castings are porous and must be sealed by auxiliary sealing processes. Sometimes these processes are not completely satisfactory.

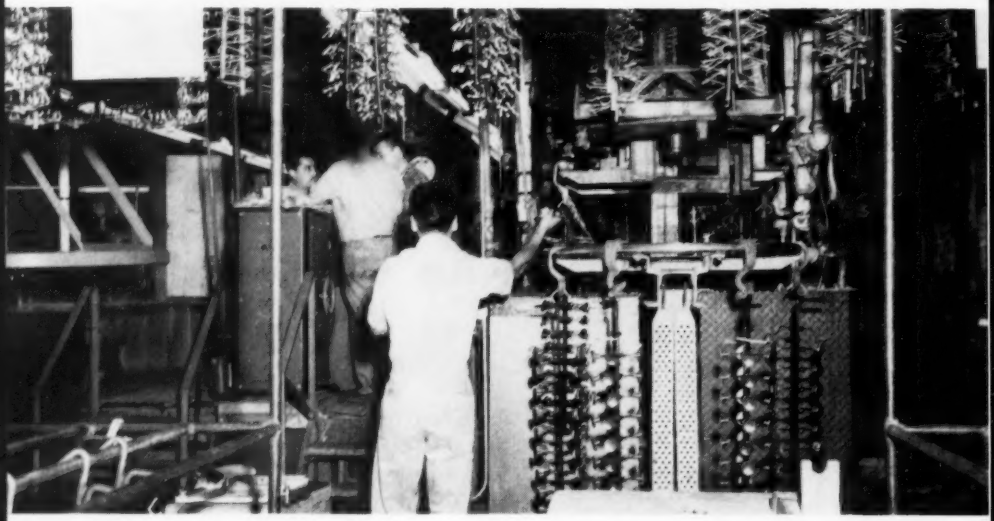
Solution of the problem is further complicated by the fact that each plant presents a separate set of conditions, since each has a different combination of finishing methods and equipment.

If we are to continue using copper and copper-toned metal finishes to produce the "warm" colors preferred by interior designers, increased effort toward solution of the "spotting out" problem is a "must."

Ezra A. Blount

—EDITOR

Plating and Paint Finishing



By MITCHELL RASKIN
Plant Manager
Ajax Hardware Manufacturing Company,
Los Angeles, California

BUILDERS' HARDWARE, the principal product of Ajax Hardware Manufacturing Company, must be produced from various metals in a wide variety of finishes to meet current style trends in building interiors. This imposes upon the manufacturer the need for versatility, particularly in his finishing department. He must employ automation as much as possible to keep his prices competitive and his operation efficient. Yet he must have facilities for producing many finishes—some of which may not be required in sufficient volume to justify fully automatic equipment. This installation meets these conditions.

Ajax fabricates hardware parts from steel or brass or produces them as die castings. Some parts are formed from coiled strip stock which has had a preliminary polishing operation; some parts are formed from stock that is purchased with the specified finish. Other parts are blanked, formed, machined, and then polished to the desired surface finish prior to plating or lacquering.

Metal Surface Preparation

After blanking and forming, many parts are suitable for barrel finishing to remove burrs and burnish the surface. The barrel finishing department at Ajax consists of a number of barrels for deburring, honing, and burnishing. Various combinations of chips, balls and burnishing compounds are used to produce the sur-

# of Builders' Hardware

face finishes desired. Two centrifugal dryers dry the parts, after barrel finishing and separation from chips and media; hence parts are delivered to the buffing department or the lacquering department clean and dry.

Drying is particularly important for those parts that have been burnished following a plating or coloring operation, and which require a final clear lacquer or varnish finish.

Hardware parts are manufactured with either a brushed (satin) finish or a bright finish. Plated surface coatings applied are copper, brass, bronze and chromium. Some parts receive black finishes. It is easy to visualize the problem that this variety of surface finishes imposes on the finishing department.

Buffing and polishing are accomplished on polishing lathes, (Fig. 1) rotary automatic polishing and buffing machines, or straight-line automatic buffing machines. Abrasive belts, brushes and various types of buffs and compounds are used to produce the specified surface finishes. Of special interest is the straight-line buffing machine set up to buff interiors or recesses of brass parts. The movable buffing heads automatically dip down to buff the recesses as the track moves or indexes the parts into position for buffing of recesses. Other wheels buff other areas of the parts as required. Some parts are automatically buffed on rotary automatic machines. These may be set up so that the parts remain stationary or rotate during buffing.

Some parts are degreased in a vapor-spray degreaser following buffing. However, Ajax officials have set up process specifications which require great care in buffing, so that a minimum quantity of buffing compound remains on each part. A little care and skill in this operation results in a higher quality, brighter finish with better color. It has been found more economical to use additional care in buffing the base metal than to have to vapor degrease parts prior to plating, or buff them following plating.

Plating Processes

The plating operations are plan-

Fig. 1—Hand buffing, using loose and sewed buffs of various sizes, is used to prepare more complicated brass, steel or die-cast parts for plating or lacquering.

"The cycle on this automatic machine is set up for plating zinc die castings."

ned with a Udylite senior automatic copper-nickel-chromium plating machine performing the principal or basic cycle. The cycle on this automatic machine is set up for plating zinc die castings. A hand line for cleaning and acid dipping steel parts is so laid out in relation to the automatic that cleaned steel parts can be hung on the automatic plater at the rinse station just prior to the nickel plating section. Further, brass and bronze plating tanks are arranged so that parts may be nickel plated on the automatic, removed for bronze plating in hand tanks, and then returned to the automatic for the final rinsing and drying operations in the cycle.

The racking area (Fig. 2) is conveniently located so that racked parts may be routed to one of the hand cleaning lines or to the automatic plating machine. The plating cycle for die castings on this automatic plater is as follows:

1. Soak clean.
2. Reverse electroclean.
3. Dip and spray water rinse.
4. Dip in H_2SO_4.
5. Dip and spray rinse.
6. Copper strike in conventional cyanide copper solution.
7. Plate in Du Pont high-speed

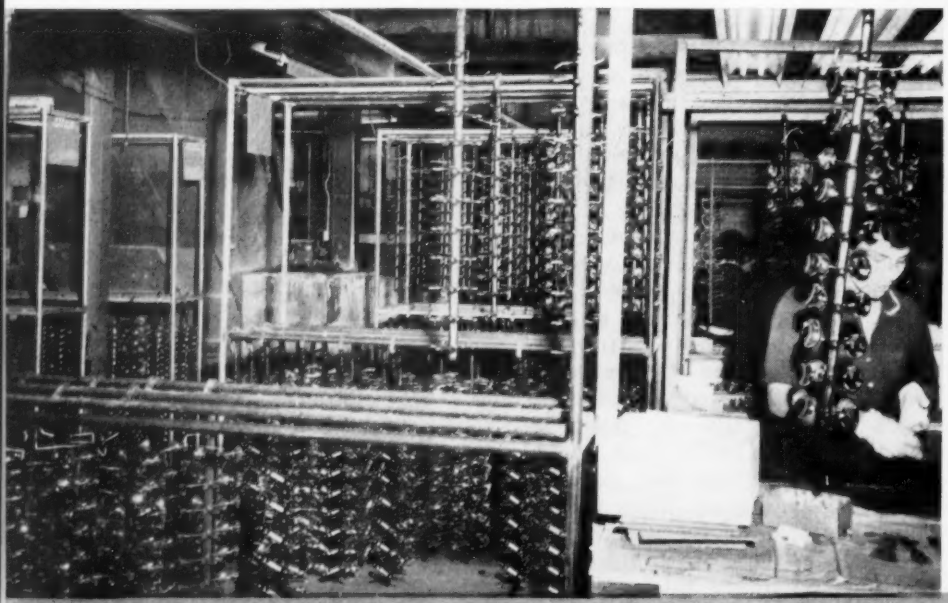


Fig. 2—Between buffing and plating areas is racking and unracking area. Parts are racked on plastisol-insulated racks. Wide variety of parts requires many different racks.

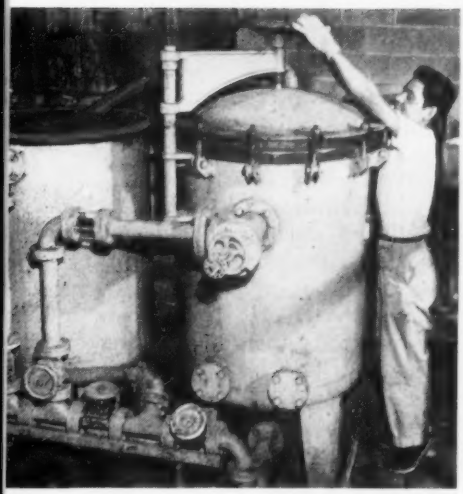


Fig. 3—Industrial filter continuously filters nickel solution to remove impurities.

copper plating bath. A new copper brightener is used.

8. Dip water rinse.
9. Dip water rinse.
10. Spray water rinse.
11. Bright nickel plate in Udylite No. 4 bright nickel solution. Anodes are bagged. Solution is circulated constantly and filtered through an Industrial filter (Fig. 3).
12. Recovery rinse.
13. Dip water rinse.
14. Dip water rinse.
15. Dip water rinse.
16. Dip water rinse.
17. Chromium plate in conventional chromium plating bath.
18. Dip water rinse.
19. Spray water rinse (Fig. 4).

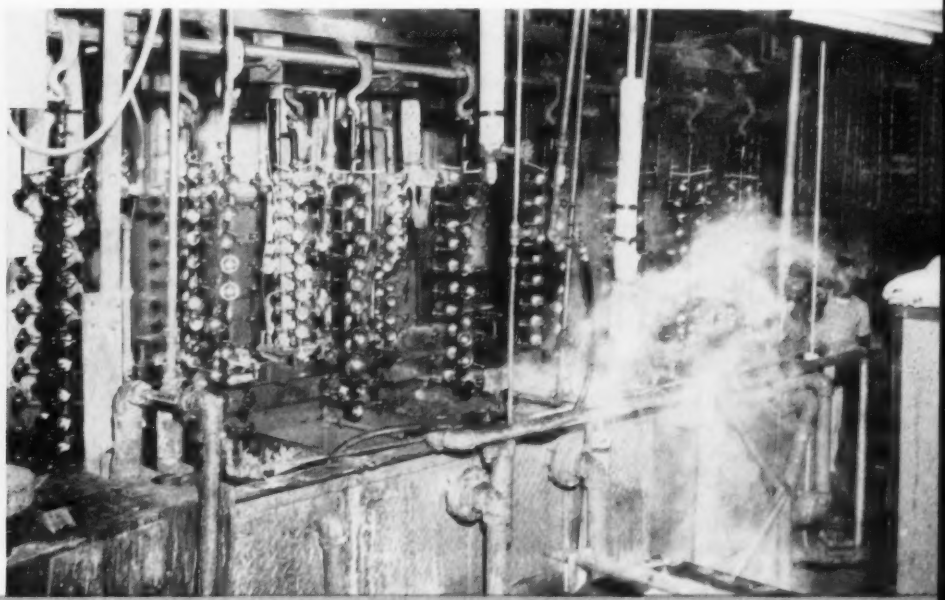


Fig. 4—Final rinsing section of Udylite automatic plating machine uses deionized water. Position of automatic in relation to other process equipment makes parts handling easy.

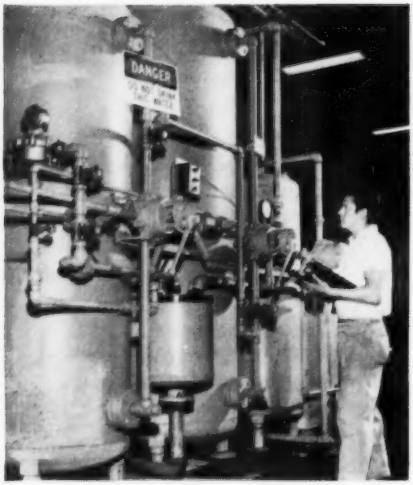


Fig. 5—Water filter and deionizer produces pure water used for plating. Treated water helps to produce higher-quality plating.

20. Dip water rinse.
21. Deionized water rinse (Fig. 5).
22. Deionized water rinse.
23. Deionized water rinse.

Rinsed parts are removed from the Udylite automatic plater (Fig. 6) and hung on an overhead chain conveyor, which carries them into an overhead gas-fired drying oven (Fig. 7). They return to floor level and are removed from the conveyor to be unracked and packed, or routed to the paint department.

Paint Finishing

Clear lacquer, clear baking varnish, or other specified paint fin-

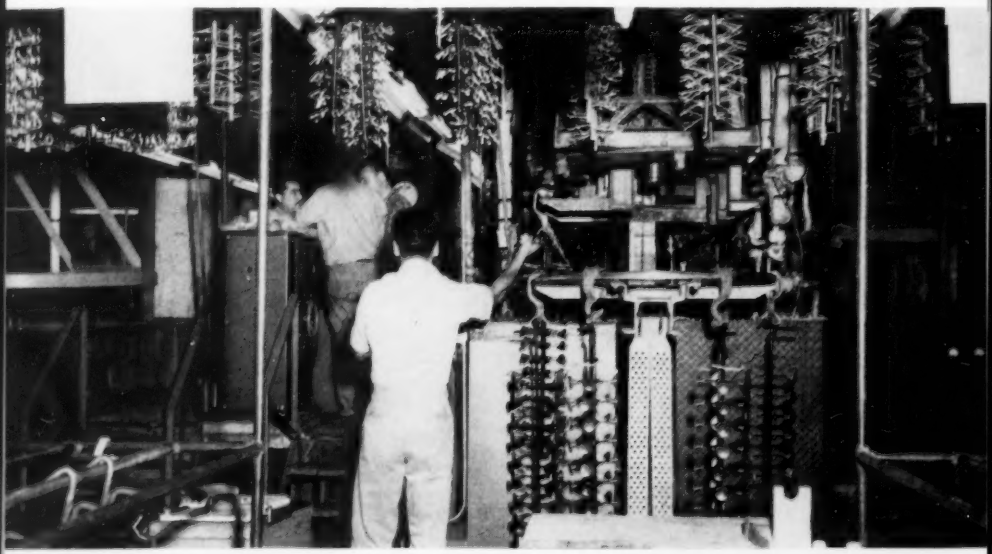


Fig. 6—Load-unload operator removes plated and rinsed parts from automatic plating machine and transfers them to oven conveyor, shown at extreme left. Plating racks not in use are stored overhead. Rectifiers used to furnish current for plating can be seen at left of loading operator, and at right of the machine, mounted above the factory floor.

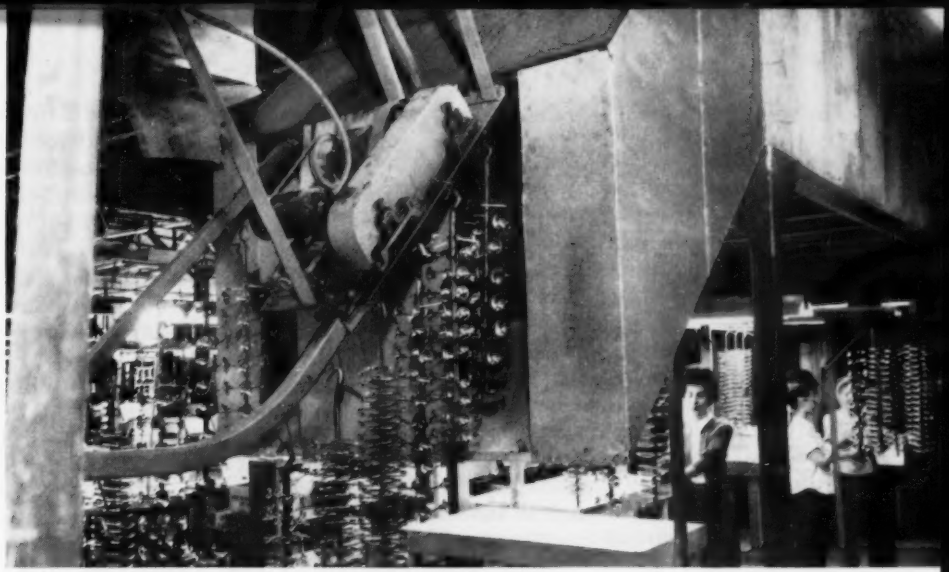


Fig. 7—Conveyorized drying oven, located above the working area, dries plated parts which have been rinsed clean in deionized water. From here, parts return to ground level, where they are unracked and packed or sent to the paint finishing department.

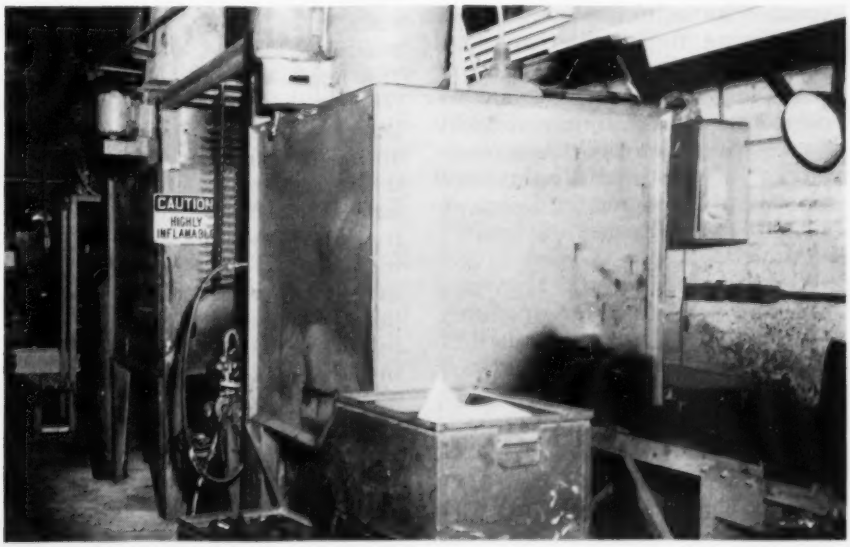


Fig. 8—Two spray booths and tunnel drying oven used for painting and lacquering. Parts being painted are mounted on racks and placed on wire mesh conveyor belt (right foreground). Parts pass through spray booths and oven to unloading station. (Photos for Figs. 3, 5, and 7 courtesy Ajax Hardware Mfg. Co. Others by PRODUCTS FINISHING.)

ishes are sprayed on racked hardware parts in the spray finishing and baking installation shown in Fig. 8. Two spray booths and several spray guns attached to pressure tanks make it possible to apply several different paint finishes to racks of different parts as they proceed on the wire mesh conveyor. Flexibility in paint finishing is just as essential as flexibility in plating.

Following spray painting, the racked parts pass through a tunnel dryer on the continuous wire mesh conveyor belt. During the short drying period, which is determined by the conveyor belt speed, the paint finishes are dried or baked by Chromalox infrared heating elements mounted in the tunnel oven.

Following the completion of all specified plating and/or painting operations, hardware parts are inspected, and packed mechanically in attractive plastic packages or envelopes to facilitate display and sale for the hardware dealer or builders' supply house.

★ ★ ★

Report on Waste Treatment

FIFTY SCIENTISTS representing all major industries in the United States, and representatives of the United States Public Health Service, convened at Mellon Institute December 13 and 14, 1956, for the Annual Meeting of the National Technical Task Committee on Industrial Wastes. Professor C. Fred Gurnham, head of the Department of Chemical Engineering of Michigan State University, presided.

This Committee is a voluntary group formed to work with the Public Health Service of the United States Department of Health, Education, and Welfare, to protect the nation's water resources from pollution and contamination. Its members actively engage in research and development work on the utilization, treatment, and control of industrial wastes, and improvement of water quality controls.

Under recently enacted Public Law 660 of the 84th Congress, the primary responsibility of the states to prevent and control the pollution of the nation's water resources is reaffirmed. The Federal government is encouraging greater efforts on the part of the states and interstate agencies by making funds available.

The rapid growth of the nation's population, which is closely paralleled by the expansion of industry during the postwar years, has made it imperative that water be conserved. In some sections of the country, water resources are being severely taxed; consequently, it is necessary that a more efficient utilization of water be made and existing sources of water supply be protected from pollution and contamination.

Dr. C. Fred Gurnham

Major American Industry, through its representatives on the National Technical Task

Committee on Industrial Wastes, is cooperating closely with the United States Public Health Service and state and municipal authorities in many specific programs to eliminate or control the causes of pollution.

An outstanding example of this sort of constructive industry activity was presented by Dr. E. C. Bain, vice president in charge of the Division of Research and Technology of the United States Steel Corporation and chairman of the Committee on General Research of the American Iron and Steel Institute.

The steel industry has long recognized that it is important for each of its plants to enjoy a good neighbor status in its community. In order to achieve this objective, a third of the Institute's research expenditures have been made in fundamental studies in connection with the abatement of air and water pollution, and highly effective results have been obtained. It is interesting to note that this good citizenship has produced tangible dividends through the utilization of by-products that formerly contributed to stream pollution.

Frank J. McKee of the Kraft Foods Company, Chicago, Illinois, is chairman of the Task Group, and Richard D. Hoak of Mellon Institute is vice chairman.

Electroplating Industry Report

The National Technical Task Committee on Industrial Wastes has, in the Electroplating Industry, through its delegate Dr. C. Fred Gurnham, and its alternate Dr. D. Gardner Foulke, submitted a report to Task Group III of the NTTCIW, which follows.

Dr. D. Gardner Foulke

It is possible for the electroplating industry to report continued progress toward pollution abatement during 1956. A measure of the effort is the number of articles published during the year. The number of papers and articles on the treatment of electroplating wastes in general was at a higher level.

Treatment methods used by the industry continue much as in the past with only minor modifications such as improved equipment and control. Ion-exchange and thermal concentration methods appear to be making some gains over the more commonly used chemical methods. Emphasis continues to be placed on waste reduction at the source and upon good housekeeping.

Research. The American Electroplaters' Society study of the kinetics of cyanide oxidation continued active at Yale University. The Academy of Natural Sciences of Philadelphia reported a strain of bacteria for the destruction of cyanide wastes. Similar work is being carried out at Michigan State University, Lansing, Mich.

The International Union of Pure and Applied Chemistry is concerned with "the economic use of water and solution of effluent problems in industry." The electroplating industry is one for which data are being accumulated.

finishing clinic

Suggested solutions to problems submitted by readers. Send your problem to our Editorial Staff. There is no charge.

High-Heat Baking Japan

Question: *We would like to know if you can recommend a paint manufacturer that makes a high-heat gloss black baking Japan that bakes at 350 deg. F.*

S. V.

Answer: It is our suggestion that you contact the companies to whom we are referring you for the information desired.

★ ★ ★

Abrasion-Resisting Finish

Question: *We have been building bar stools for three months and are having a problem getting a good finish that will not mar or wear, mainly on the foot rest. Is there a type of finish available that holds up better than paint? We use black for the finish. There is also a gold or bronze color used for some applications. Can you name firms that could be of help?*

M. S.

Answer: Your problem of securing an adequate finish which will withstand the wear and abrasion which you describe is, indeed, a difficult one. There are a great many paint finishes manufactured which have superior abrasion resistance. However, you may find that the service requirements for your product require an electroplated finish. We are referring you to several manufacturers of paint finishes for specific recommendations.

The gold- or bronze-colored finish which you mention is secured by dyeing anodized aluminum. If you plan to manufacture your products from aluminum, you might find this satisfactory.

★ ★ ★

Plating Screw Threads

Question: *We would appreciate your advising us where we may obtain information on the proper machining of screw threads prior to plating, so that the threaded surfaces will fit properly after plating.*

C. I. L.

Answer: An article entitled "Effect of Plating Thickness on Screw Thread Dimensions" was published in the November, 1954, issue of PRODUCTS FINISHING. We are forwarding a copy of this article because we feel that it contains information which will be helpful to you.

★ ★ ★

Applying Porcelain

Question: *We are modifying certain portions of used exhaust manifold for*

aircraft. After modification, these pieces have to be cleaned and a new coat of A-418 porcelain applied and fired at 1875 deg. F.

Our trouble is that the new porcelain will not adhere to either the new portion or the old portion of the manifold. It flakes off when withdrawn from the oven.

Can you supply us with complete information on the proper procedure for applying this A-418 porcelain?

J. P. M.

Answer: As you know, one of the steps in the process of applying porcelain to special steels is the application of a thin nickel coating to the steel. It is quite possible that your processing people neglected to do this in applying the new coat of porcelain to the stripped exhaust manifolds.

For further information, we are referring you to various porcelain enamel supply companies.

★ ★ ★

Heat-Resistant Finish

Question: *We are looking for a finish for aluminum tubing and ingot iron that will meet MIL-E-5272 A; and in addition withstand ambient temperature of 500 deg. F. Can you tell us who makes such a finish?*

C. W. P.

Answer: For information regarding a finish for aluminum tubing we are referring you to several manufacturers of heat-resistant finishes.

★ ★ ★

Spraying Plastic

Question: *We have a problem of spraying a coating of an epoxy plastic on the inside of a 12-gallon water pressure tank.*

After body and heads have been welded together, there remain only two flange openings, 1-inch diameter and ¼-inch diameter.

This tank is 23½ inches long by 12 inches in diameter. The outside will also be painted with the epoxy plastic and must be baked dry.

Is there any equipment available for spraying the inside of such a tank?

F. W. T.

Answer: We are referring you to several companies from whom spraying equipment is available.

★ ★ ★

Surface Preparation

Question: *In the not too distant future we are planning to use glass reinforced plastic extensively in the manufacture of one of our products. We are interested particularly in the problems, if any, which will confront us in finishing the material. The following are questions that we would like to have answered:*

1. *What pre-paint treatment is required?*
2. *What cleaning material may be satisfactorily used?*
3. *Is there a particular type of primer used?*
4. *What types of finish-coat material are preferred?*
5. *To what degree, if any, can heat be applied in curing the finish coat?*
6. *What type of stripper may be used to remove organic finishes from this type of plastic?*
7. *To what degree may compounds be colored previous to molding?*

We would sincerely appreciate any information you can give us.

L. J. E.

Answer: We are referring you to suppliers of paint finishes currently supplying these finishes to companies engaged in finishing glass reinforced plastic.

Wetting Agents and Buffers in Cleaning and Electroplating

By EDWARD ENGEL

TENSION EXISTING BETWEEN TWO SOLIDS or a solid and a liquid, or between two immiscible liquids is called interfacial tension. When a metal is immersed in a water solution there are two forces at work between the water and the metal interfaces. One force is the surface tension of the liquid, and this force tends to draw the water away from the metal surface. The other force is the adherence of the liquid to the metal. These two forces together form the interfacial tension. If the latter force is the greater of the two, the metal will wet.

A wetting agent (W.A.) is a substance which, when added to a liquid, lowers its surface tension, i.e., decreases the liquid to liquid adherence, hence increasing the liquid to metal or material adherence.

The power of a wetting agent to lower the surface tension of a solution is measured in dynes per centimeter. For plating and cleaning solutions, the du Nuoy Tensiometer is the wetting-power measuring device generally used. An interfacial tension below 30 dynes indicates that the material is an excellent W.A.

There are a number of types, chemically speaking, of wetting agents, such as naphthenic soaps, alcohol sulfonates, sulfonated amides, sulfonated alkyl-aryl compounds, and esters of sulfonated dibasic acids. These are either anionic or non-ionic. The cationic wetting agents are much less numerous; they are usually primary and secondary amine acid salts, quaternary ammoniacal compounds and sulfonium compounds.

With the exception of pure hydrogen peroxide, water has the highest surface tension of any liquid. Usually substances with low boiling points, like solvents, have low surface tension. Distilled water has a surface tension of 73 dynes per cm. Nickel plating solutions with good wetting agents have as low as 30 dynes surface tension. Surface tension decreases with rise in temperatures. This explains the better detergency of warm cleaning solutions. Detergency means the stable dispersion of soil as indicated by ease of rinsing. Alkaline additions usual-

ly raise solution surface tension.

It is necessary to obtain a chemically clean metal surface before plating. In order to remove all foreign matter, greases, oil, dirt, and metal particles, saponification, emulsification, lifting action, and deflocculation are required. In addition to the foregoing factors of removal, the cleaning solution must not etch or pit the work nor deposit insoluble or difficult-to-rinse materials.

Soaps

Although soaps are excellent in their detergent and wetting abilities (cleaning effectiveness), without certain additives, their disadvantages in cleaning operations prior to plating are as follows:

1. Difficult to rinse.
2. Low solubility in cold water.
3. The foam is too stable.
4. Precipitates of calcium and magnesium, and heavy metal salts may form.
5. They are neutralized by acids to form fatty acids.
6. They salt out on the work.

The use of Versene in soap solutions, however, will complex the hardness constituents and other mineral impurities. Thus a soap-Versene cleaning solution, while having the superior detergency and wetting power of soap alone, will not have the listed disadvantages.

Caustic soda and other alkaline solutions, although possessing good scouring action, are poor dispersing agents. In contrast, sodium silicate has a poor scouring power but is an excellent dispersing agent. These two examples indicate that no one chemical has all the required properties for cleaning metals. Nor can it be claimed that the addition of an organic wetting agent brings perfection. For instance, while animal or vegetable oils usually can be saponified (made to form water soluble soaps), in an alkaline solution, mineral oils do not react in that manner. Emulsification is required to remove mineral oils from metal surfaces immersed in an aqueous solution. This reaction calls for the use of soap and wetting agents or dispersing agents. Emulsification will also be furthered by agitation and the use of elevated temperatures.

"She's a real platinum blonde—I plated her myself."

"The addition of wetting agents to plating baths is a practical necessity for high speed and bright deposits."

Better detergency usually is obtained with wetting agents producing the greatest foam. However, agitated solutions and electrolytic operations require low-foaming W.A. Best results will be obtained from solutions which have unstable foams.

Polarity

Wetting agents may be non-ionic, (neutral polarity) and thus not attracted to any polar substance or metal in a bath; anion active; cation active. An anion active agent is attracted to an anionic material, and a cationic active agent is attracted to cationic materials. Any one of the agents may be used or a combination of any two, except anionic and cationic types. The use of the latter two together will cause precipitation. It is also possible for anionic agents to cause precipitation at the anode, and cationics can be precipitated at the cathode. When no agitation exists, some anionic agents tend to pit a metal.

The wetting power of a solution is also dependent on the degree of solubility and concentration of the materials in the bath.

Stability

The stability of a W.A. in solution with hard water, and its resistance to precipitation, are tested by the Hart Method-Tolerance Test. A W.A. with poor stability in hard water may be made stable by adding small amounts of Versene.

Criteria for Selection

In addition to the factors detailed above, wetting agents are selected on the basis of their detergency and degree of foam; the effect of electrolytes and electrolysis; their resistance to oxidation, reduction and hydrolysis; rinsibility; the reaction on the tank and work; the polarity; and the reaction with acids and alkaline solutions.

In reference to the polarity factor, a wetting agent or a solution is polar or non-polar or hetero-polar (having both polar and non-polar parts). Polar refers to water solubility; non-polar signifies oil solubility. There are few liquids that are more polar than water.

Lypophylic is a term signifying a substance which sheds or leaves water and is attached to oil. Hydrophilic refers to a substance which draws water. Wetting agents are either lypophylic or hydrophilic or have proportions of each.

Cation active wetting agents are as effective in acid solutions as are soaps in alkaline solutions. Being of like charge, the cation active ion cannot react with heavy metal ions. A cation active agent is aided by the presence of a non-ionic agent in the bath, as the latter increases the penetration.

Use in Plating Baths

The addition of wetting agents to plating baths is a practical necessity for high speed and bright deposits. The maintenance of sufficient W.A. in a bright nickel electrolyte is judged mainly by appearance of the deposit and the improved adherence.

"By the use of wetting agents in pickling solutions, less metal is dissolved, less acid is consumed, and less spray is thrown."

Table I

Buffer System	pH
Glycocoll—sodium—HCl	2.0
Potassium—phthalate—HCl	2.8
Primary Potassium—Citrate	3.7
Acetic Acid—Sodium Acetate	4.6
Potassium Acid Phthalate—Sodium Hydroxide	5.0
Secondary Sodium Citrate	5.0
Carbonic Acid—Bicarbonate	6.5
Primary Phosphate—Secondary Phosphate	6.8
Boric Acid—Borax	8.5
Borax	9.2
Boric Acid—Sodium Hydroxide	9.2
Bicarbonate—Carbonate	10.2
Secondary Phosphate—Sodium Hydroxide	11.5

The addition of Versene to certain nickel baths also will further enhance the properties of the deposit and increase the bright range.

Use in Pickling Solutions

By the use of wetting agents in acid pickling solutions, less metal is dissolved, less acid is consumed, and less spray is thrown. W.A. in a 50-per cent-HCl solution reduces the surface tension from 69 to 31 dynes. Spray from acid pickling baths may travel many feet to spot work and corrode equipment; the addition of a W.A. in such solutions reduces this by reason of foam formation. As a result less forced ventilation is required, and less heat will be withdrawn from the pickling room during cold weather.

Buffering Agents

In addition to the properties of aqueous solutions which contain wetting agents, certain other additives bring continuity of effectiveness by stabilizing solutions. (One of these additives, Versene, has already been cited.) Another type of additive is often required to stabilize the pH of the solution and thus maintain the effectiveness of wetting agents. This type of additive is called a buffering agent, and provides H-ions and OH-ions that are taken up by strong acids or alkalies (Table I). Thus it is able to maintain the H-ion concentration, i.e., the pH. In buffered solutions, caustic cannot form at the cathode. Buffering agents may be mixtures of any weak acids or alkalies.

"Well, I've put on a mask, as you insisted."

Protection of Germanium Rectifiers for Electroplating

By STUART P. JACKSON
Manager—Commercial Equipment Engineering,
General Electric Company

DESIGNING GERMANIUM RECTIFIERS for electroplating power supplies presents a real challenge to the engineer. One of the most important of his problems is adequate protection of the rectifier.

Since the introduction of metallic rectifiers for electroplating about twenty years ago, manufacturers have been trying to achieve more lasting protection in the corrosive atmospheres in which rectifiers must operate. To this old problem are added all the new ones created by a new rectifier, germanium.

Atmospheric Protection

Air-cooled germanium rectifier units may suffer due to two general atmospheric conditions. Lint, dust and abrasive particles are often encountered in electroplating shops from buffing wheels and cutting devices. While these particles do not directly damage germanium rectifiers, they may clog up the cooling air passages, thus causing the cells to overheat and fail. Corrosive fumes and water vapor are necessary parts of electroplating. But this combination can cause extensive damage to electrical equipment.

Air-borne Particles

An air-cooled rectifier unit is not unlike a vacuum cleaner in many respects. It stands, a rectangular box, with air rushing in and carrying with it any adjacent air particles. So as not to attract air-borne particles, it is necessary to increase the amount of area adjacent to the particles. This reduces the intake velocity (and offers less impedance to air flow). The low incoming air velocity does not now have the force to pull in the unwanted dirt. This high intake air area minimizes clogging of cooling air passages.

Where particles are carried in the air, eventually some must adhere to the fin surfaces. Although the time interval may be days or years, depending on the amount of contamination, eventually it will be necessary to clean the fins. A means of easy access must be provided for this purpose. The cleaning interval can only be determined by the user. It depends on the cleanliness of his shop and will change as conditions within the room change.

Figure 1 shows a typical electroplating power supply. The air is taken in through the louvers at the top front. The area of the intake opening is 137 square inches com-

pared to a blower intake of only 38 square inches. Thus, the velocity of the air entering the unit is less than the velocity entering the blower by a factor of 3.5 to 1.

A germanium cell with attached fins is displayed in Fig. 2. This design is that used in the unit in Fig. 1. It is mounted in a plastic tube (shown in Fig. 3).

Air velocity should be high to achieve the greatest heat transfer from the fin surfaces. Note that the cell structure (shown in Fig. 2) further reduces the area to approximately 30 square inches. Thus, the velocity across the fin surfaces is approximately four and one-half times the entrance velocity. This feature provides good cooling and poor air cleaning.

Figure 4 shows a more common germanium cell assembly using single-sided cooling and rectangular fins. Note once again the wide fin spacing.

For accessibility, the stack assembly (Fig. 5) is secured with spring clips. The example shown is only one method of many for gaining easy cleaning access.

Corrosive Gases

Three conditions can cause damage to a rectifier by corrosion.

In many cases, it is possible for work entering or leaving a tank to splash or drip tank solutions on the plating room floor. Thus, any cooling air which is needed for the unit should not be taken near the floor level. To do so will concentrate the corrosive acid on the most critical components of the power unit, those being cooled.

The use of liquids makes it necessary to have piping in the plating room. These pipes are generally cooler than the surrounding humid atmosphere. Thus condensation occurs on the pipes and drips on to whatever is below. This condition makes it necessary for electroplating equipment designers to put a solid top on the units; thus no

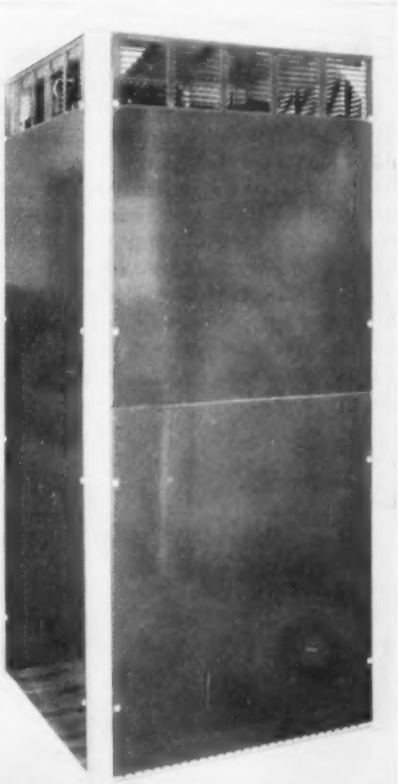


Fig. 1 — Typical rectifier. Air is taken in through louvers at top of the cabinet.

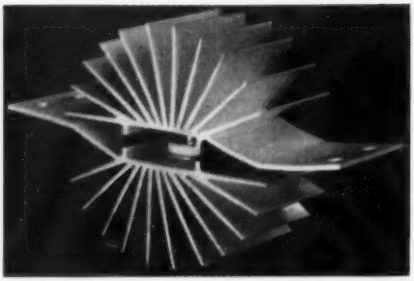


Fig. 2—Germanium cell with cooling fins attached. It will be mounted in tube (Fig. 3).

dripping liquid may cause damage within the unit.

If the rectifier cubicles are placed close to the tanks, it is possible to splash the tank solution on them. Solid or louvered panels guard against this damage.

In the discussions above, the casing serves as a major barrier against corrosive gases or liquids. Therefore, it is particularly vulnerable to attack. Experience has shown that a three-step procedure is necessary to ensure the proper protection. First, the base metal should be phosphatized. Second, a zinc chromate primer or the equivalent should be applied. Third, the final coat of paint should have a vinyl or rubber base for maximum defense against both acids and alkalies.

Other components of the power supply also must be protected. Transformers or saturable reactors, if used, are generally in the cooling air stream. They too are vulnerable to corrosive attack.

Adequate protection can be given magnetic devices by impregnating with a clear varnish followed by a pigmented varnish dip. The first impregnation may be by the hot dip or vacuum method, depending on the geometric configuration and type of winding. It is important to get complete penetration.

As the first varnish coat dries, it shrinks and leaves cracks. The function of the second dip is to seal these cracks. This method of protection has been tested extensively and found successful.

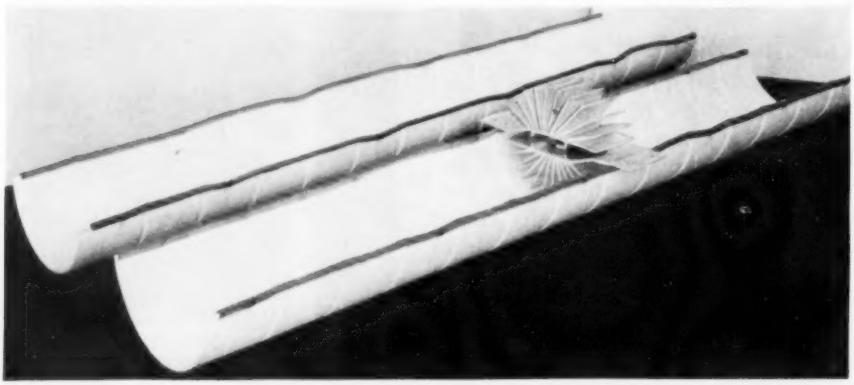


Fig. 3—Photo showing how germanium cell and cooling fins are mounted in a plastic tube.

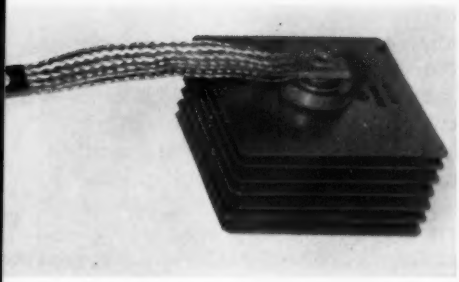


Fig. 4—More common-type germanium cell uses single-sided cooling, rectangular fins.

All components which do not have to be cooled by the air flow should be isolated from it. This isolation affords some protection. Further protection can be provided by spraying with a vinyl- or rubber-base paint. A clear finish is usually preferred.

Electrical Protection

Electrical protection for the power and control circuits of germanium rectifiers is provided. Various methods are used.

High temperatures because of either high ambient temperature or overloading the rectifier unit will cause a reduction in the ability of the germanium cell to withstand reverse voltage. Thus, cell temperature must not exceed a given limit. A thermostat is placed near the cell to prevent excessive temperature.

Selenium and copper oxide have the enviable ability to seal themselves after an overload, under many conditions. Thus, if either of these cells were to "see" a high "spike" of voltage in the reverse direction, in all probability a spot on the cell would fail. The momentary short at this spot on the cell would convert the energy of the transient pulse to heat. The heat thus produced burns a spot on the cell until the weak area is eliminated and the remainder of the cell is good.

Germanium rectifiers do not exhibit this property except under special conditions not normally seen in power circuits. It is, therefore, necessary to protect all of the germanium cells against the transient voltages that may exist on power lines and against the transient voltages that are created by switching.

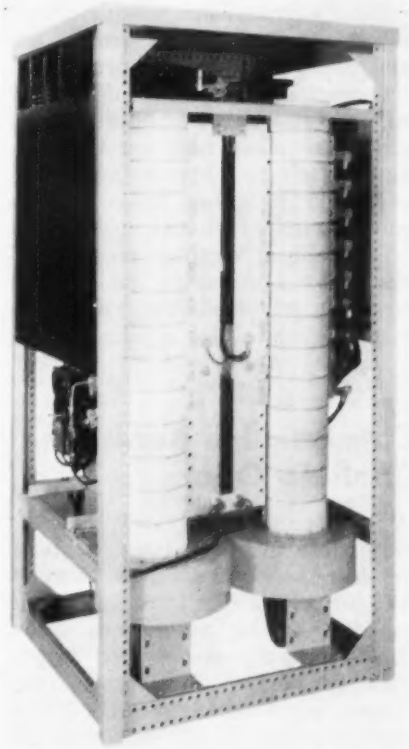


Fig. 5—Stack assembly in rectifier cabinet. It is held in place by spring clips so that access in easy for cleaning. (Photos courtesy General Electric Co., Schenectady, N. Y.)

The Perfect Solution

The perfect solution to the rectifier protection problem can be given in two parts. First, the life, maintenance and cost of the process in which the rectifier is used depends largely on the care and thought put in its installation. The purchaser who carefully plans his room to reduce the danger to the electrical equipment will obtain dividends in reduced cost and less trouble. Don't depend on the manufacturer of the equipment to do all the protecting.

Second, understand the device being purchased. Ask questions to make sure it has been carefully designed. Be sure adequate protection has been provided to cover the points noted previously.

Germanium rectifier power supplies offer benefits to the user. If properly protected, they will give excellent service for a long time.

★ ★ ★

Catalytic Lid Banishes Cooking Odors

What's cooking? It will soon be impossible for your nose to know. Science has found a way to burn up cooking smells like those of boiling cabbage, frying onions or even charred steaks and chops before they get out of the pot or pan. Grease, accustomed to flying like a homing pigeon to kitchen walls and ceilings, is destroyed in the same operation.

A new electric appliance that converts the objectionable smells, smoke and grease of top-of-the-range cooking into a clean, odorless effluent, has been developed by Oxy-Catalyst, Inc., Wayne, Pa. It eliminates the need to open doors or windows or to use a ventilating fan during cooking time, it is stated.

The device consists of an electrically heated wire catalyst fitted into the center of a 12-inch diameter aluminum cover.

The catalyst burns without flame the objectionable grease and by-products of cooking as they rise through the opening in the center of the appliance.

Oxy-Catalyst has licensed Kamkap, Inc., a leading producer of housewares, to manufacture and market the catalytic lid under its own name.

The catalytic element, called an Oxycoil, which makes fumeless cooking possible, was developed by

Fig. 1 — New electric appliance eliminates smells, smoke and grease from top-of-the range cooking. Secret is the electrically heated catalyst element that fits in the center of pan's aluminum cover and removes all fumes.

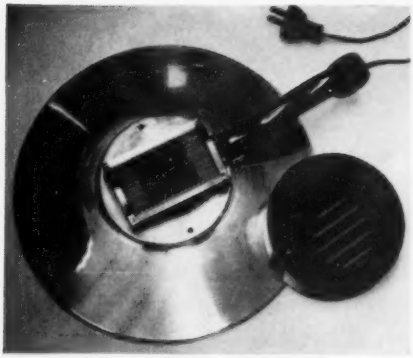


Fig. 2—Removal of top of catalytic lid exposes catalytic element that burns cooking fumes without flame, discharges them as odorless, invisible effluent. The unit is called the Oxycoil. (Photos courtesy Oxy-Catalyst, Inc.)

Oxy-Catalyst last year for electric range oven applications. It is now used by two leading appliance makers in their premium electric ranges to eliminate the odors and smoke of oven baking, roasting and broiling.

The Oxycoil is basically a number of turns of catalyst-coated resistance wire wrapped around two porcelain end posts. This assembly is mounted in a stainless steel frame that has good resistance to temperature and shock.

The catalyst, a chemical compound containing platinum, burns combustibles in a stream of air at relatively low temperatures — temperatures too low to support ordinary flame combustion. Oxy-Catalyst has already put similar catalysts to work in industrial pollution control systems and in special mufflers that purify engine exhausts.

The housewife uses the new appliance just as she would a conventional pot or pan lid—except that she first plugs it into the nearest electric outlet. The resistance wire in the Oxycoil brings the catalyst to its operating temperature in about thirty seconds.

As cooking proceeds, the fumes from the food flow up through the open grid of catalyst wire in the center of the lid. On contact with the coated wires all organic combustibles — odors, smoke, grease and other impurities — are catalytically burned.

The twelve-inch diameter of the catalytic lid permits its use with any round pot or pan of that size or smaller.

★ ★ ★

THE BIG ATTRACTION. A sound film tells the story of electrostatic spray painting in industry. The film, prepared primarily for, and recommended to, those interested in factory production line painting operations, is available upon request to the **Ransburg Electro-Coating Corp.**, Barth & Sander Streets, Indianapolis 7, Indiana.

Viewers first are given a brief introductory explanation of electrostatic spray painting processes and Ransburg equipment. Then they are taken on a trip, visiting large and small plants where Ransburg Electro-Spray is being used to paint a variety of products. Advantages of the process are proved by actual case history style of presentation, with over half of the shooting being done "on location" in customers' plants.

A wide variety of applications is included in the plant visits to illustrate versatility of the No. 2 Process. For instance, the first use of Ransburg No. 2 Process for the application of porcelain enamel is shown in the visit to GE's Appliance Park plant. Automobile chassis . . . lighting fixtures . . . refrigerators . . . toys . . . home laundry appliances . . . door knobs . . . file cabinets—all of these products and many more are included in the pictures of large and small plant finishing departments.

Some of the 22 conveyorized Ransburg test laboratories where new applications are continually proved for production line installation are shown. Viewers get an overall picture of the complete Ransburg services to the industrial painting field.

DAYCO HAMMER FINISHES

For uniformity of pattern, depth of gloss, permanency, toughness, chip resistance; all features that help to make sales and build a quality reputation for your products, specify DAYCO baking or air dry Hammer finish.

Backed by half a century of "know how", Dayco finishes have a quality reputation you can depend upon. We have, or will produce for you, the special finishes your production calls for.

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- Primers
- Surfacers
- Baking Enamels
- Handle Finishes
- Removers
- Screening Materials (Lacquers—Vinyls—Synthetics)
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DAY FINISHES

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Control of Pickling Prior to Galvanizing Reduces Waste

The cost of using more acid than needed in pickling is not too great in itself, but add to it the cost of waste treatment and disposal and it becomes obvious that efficient pickling is worth money.

By JOHN L. COLLINS
Superintendent of Galvanizing Dept.
Etna Plant, Spang-Chalfant Div. of the
National Supply Co.

THE QUANTITY OF ACID USED in removing scale from continuous-welded steel pipe prior to galvanizing varies greatly from plant to plant for the same kind of pipe. In some cases, the amount of acid being used is 50 to 60 per cent greater than required. On reviewing my past experience in trying to economize in pickling it is obvious that each year the consumption of acid has been reduced in our plant without changes in inhibitors or acids and no radical changes in pickling procedure. There has been consistent training of the picklers to change wasteful habits in pickling practice, however.

The price of sulfuric acid is not a great factor in the material cost of galvanizing pipe. But since most plants are faced with the problem of waste disposal, this phase of the operation becomes more of a cost factor than originally apparent, if acid consumption is greater than need be. The cost of waste treatment and disposal is greater than the cost of the acid used. In other words, the pickler pays a double penalty for the acid he uses in excess of that required.

State laws controlling the pollution of streams can skyrocket pickling costs if acid consumption is not carefully controlled. In Pennsylvania, for instance, the law requires that no more than 75 pounds of 100 per cent sulfuric acid per 2,000 pounds of total acid consumed per month be discharged into streams; iron content cannot exceed 37.5 pounds per 2,000 pounds of total acid consumed per month. With these restrictions on stream pollution, it is possible that some companies may even have trouble disposing of rinse water. Rinsing of pipe from high iron-containing pickling solutions can cause the dis-

←———For more data on advertisement on opposite page circle 165 on Reader Service Card.

"The most important step in attempting to reduce acid consumption is to pickle slowly and at low temperatures."

charge of more iron into the streams in rinse water than is permitted.

The most important step in attempting to reduce acid consumption is to pickle slowly and at low temperatures, preventing unnecessary solution of iron and rapid reduction of acid concentration.

To pickle slowly, at low temperatures, it is necessary to have a sufficient number of pickling tanks to supply the amount of pipe demanded at the galvanizing kettle. In my department we have five pickling tanks. Two of these are the rocker type, in which the pipes are constantly moved in and out of the acid to provide motion of the pipe and agitation of the solution. The other three tanks are still-pickling tanks, wherein the pipes are moved periodically by a crane to provide agitation and circulation of the acid. Our future plans call for installation of another rocker-type pickling machine and elimination of the still tanks, so that we can supply all the pipe needed from four tanks instead of five and still use the same temperatures.

How much acid is required under ideal conditions? I conducted a test in our plant under carefully controlled conditions to determine the minimum amount necessary to do the task well. To begin the test on the use of sulfuric acid I selected one tank from the rocker-type pickler and filled it with a new solution of acid. The concentration was 7.58 per cent by volume of 66-degree Baume sulfuric acid. The volume of the solution at the beginning of the test was 2,824 gallons. Three quarts of a popular brand of pickling inhibitor were used to retard the solution of the steel in the acid. The temperature of the solution at the beginning of the test was 75 deg. F. The total pickling time was 100 hours and 24 minutes.

At the beginning of the test, a large quantity of small pipe was pickled at a temperature ranging between 86 and 90 deg. F. The pickling time for some lifts was over three hours at this low temperature. These pipes, no doubt, were cleaned free of scale before they were removed, but were permitted to remain in the solution to ensure complete scale removal. The lower half of the lift, which lies in the rocker chains, always requires a little more time for scale removal than the upper section of the lift. In the upper section, the acid pours out of the ends of the pipes as they rise above the solution level; thus the acid is completely changed inside these pipes each time they move in and out of the solution.

Each lift was closely inspected for complete scale removal at regular intervals so that new lifts could be started as soon as possible. As the final lift was removed from the acid there was considerable formation of iron sulfate on the pipe and the pickling period required was at least three hours of pickling at 150 deg. F. This time was too long for production purposes, and since the iron content was approaching five per cent, the test was terminated.

The total tonnage pickled during

". . . there are other advantages that are difficult to evaluate in terms of cost."

this test was 228.3 tons. The quantity of acid used was 3,190 pounds of 66-degree Baume sulfuric acid, a consumption of 13.9 pounds of acid per ton of pipe pickled. This low rate of acid consumption can only be realized through constant attention and analytical control. It does demonstrate one fact, however: pickling at lower temperatures for longer periods of time saves acid and waste-disposal expense. The cost of acid and inhibitor used in this test was approximately $38.00 and the cost of hauling the waste acid was about $56.00, a total of $94.00 for acid costs on 228.3 tons of pipe. If the acid consumption for the same amount of pipe approaches 40 pounds of 66-degree Baume sulfuric acid per ton of pipe pickled, as it can in an inefficient pickling operation, it could add as much as $1.00 a ton to the pickling cost alone.

In addition to the savings in pickling costs from the use of low-temperature pickling, there are other advantages that are difficult to evaluate in terms of cost. The reduction of corrosive fumes in the atmosphere is certainly beneficial to both personnel and equipment. This condition, as most galvanizers know, can be most obnoxious, especially in cold weather. Another benefit is that the lower hydrogen absorption in low-temperature pickling helps to produce ductile coatings. The hydrogen which is absorbed in steel during pickling tends to evolve through the zinc coating as the pipes are withdrawn from the zinc. These points of evolution result in minute craters, which are susceptible to rupture where high-ductility coatings are required.

To remove scale in stubborn cases, where a longer time is required, the number of tanks working on a specific lot was increased to speed the operation, rather than raising the temperature or adding more acid. In the past, the pickler would have raised the temperature and added more acid to hasten the operation. Consequently, the iron concentration would rise to six or seven per cent, pickling would become difficult, and the tank would have to be discharged, wasting 500 to 600 gallons of 66-degree Baume sulfuric acid needlessly.

The practice of adding acid to pickling tanks and pickling in solutions with concentrations of iron over five per cent is also reflected in higher drosses. The high iron content of a flux tank is almost invariably caused by dragout of high-iron-containing pickling solutions. In this type of acid solution, pickling is slow and only by raising temperatures can scale be removed. When pipes are removed from such solutions, there is a large amount of iron sulfate crystallized on the pipes. Some of this salt is oxidized to the ferric state in the atmosphere and this cannot be removed in the rinse tank. These salts, in addition to the ferrous salts that are carried over to the flux tank, can account for as much as 50 per cent of the dross produced, even under ideal rinsing conditions.

Control of Pickling . . .

Another source of acid waste is in the storage of pickled pipe under water in rinse tanks. The storage of pickled small sizes such as ½- or ¾-inch pipe can be troublesome when they are returned to the acid for the regular galvanizing cycle. Some water, especially raw river water, which has a high oxygen content, causes a layer of iron oxide to form on the pipe. This is difficult to remove in sulfuric acid. The reduced circulation of the acid through the smaller sizes of pipe increases this difficulty and eventually results in unnecessary waste of acid. It is much better to store pickled pipe in the atmosphere until it is ready for galvanizing.

The advantages to be obtained in low-temperature pickling are many and may result indirectly in unexpected savings. The investment in extra tanks to permit longer pickling periods is more than justified in better pickling and greater savings in acid.

—Adapted for publication in PRODUCTS FINISHING from a paper presented by John L. Collins before a meeting of the American Zinc Institute. Published by permission of the American Zinc Institute.

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- PARTS WASHERS
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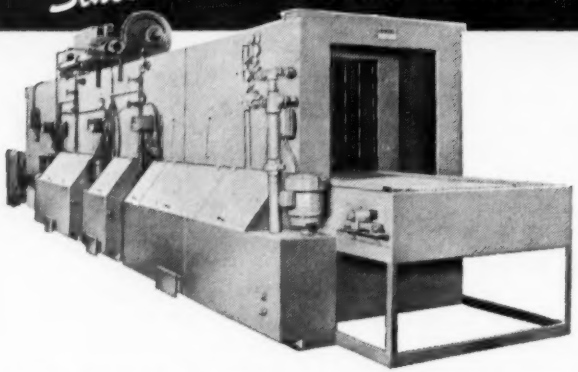
- SPRAY PICKLING
- FLOW COATING



METAL PARTS WASHERS • PHOSPHATIZING UNITS
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If you have an application for cleaning, phosphatizing or pickling of steel surfaces, Dry-off ovens, Dip-coating, Flow-coating, Bake-ovens, individual units or complete systems, it will pay you to discuss methods, operating costs, maintenance costs, equipment requirements and layouts with CIRCO Engineers.

FOR CIRCO SALES ENGINEER OR BULLETINS AND QUOTATIONS, WRITE TO:
CIRCO EQUIPMENT COMPANY
Clark (Rahway), New Jersey

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CORROSION-RESISTANCE, PAINT BASE ON ALUMINUM AND MAGNESIUM

TYPICAL APPLICATIONS

Aircraft and Missile Parts

Automobile Hardware

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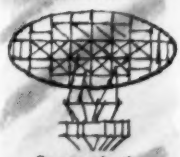

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EASE OF USE—Iridite is a simple chromate conversion treatment. Fast, easy, economical. Dip, brush or spray it on at room temperature. No special equipment. No specially trained personnel.

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LOWEST COST—You have only minimum equipment cost, no special racks, high speed operation, lower overall handling costs.

CHOICE OF APPEARANCE—Clear coatings that retain metallic lustre to dark, maximum protection coatings. Dyes available, too.

IRIDITE #14 and #14-2 (Al-Coat) for ALUMINUM—Both provide excellent corrosion protection and paint base. Iridite #14-2 is an improved product that allows greater flexibility in operation and coating thickness and produces the optimum in corrosion protection. Either coating provides corrosion resistance superior to complicated electrolytic treatments in a fraction of the time. These coatings also have low electrical resistance, aid in arc-welding, provide a good base for bonding compounds, have no effect on the dimensional stability of close-tolerance parts. Choice of appearances ranging from clear through yellow iridescence to full brown. Red, green, blue, orange or yellow dyes available.

IRIDITE #15 (Mag-Coat) for MAGNESIUM—Produces a protective, paint base film with corrosion resistance at least equal to long, high-temperature dichromate treatments in a fraction of the time and at room temperature. Appearance can be varied from light brown to dark brown and black.

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SEE FOR YOURSELF WHAT IRIDITE CAN DO . . . SEND SAMPLE PARTS FOR FREE PROCESSING. Also write for handy Reference File on Iridite chromate conversion coatings. Or, for immediate information, call your Allied Field Engineer. He's listed under "Plating Supplies" in your classified phone book.

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STARTS HERE

The special nature of Exon resins—"Pin-Pointed Properties" to supply specific answers to special needs—is particularly desirable in preparing coatings.

Because products and processes vary, Firestone Exon has engineered 6 solution resins to help you formulate a successful coating. Each resin differs in properties, such as the solubility factor charted above, to suit various applications.

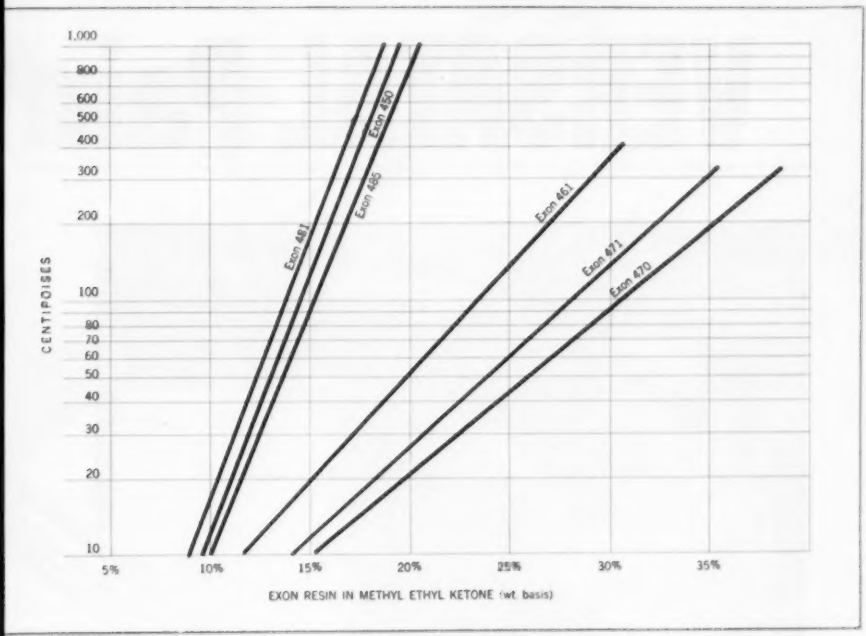
One property in common: superior quality of performance with the resultant production speed and savings which have made Exon industry's No. 1 source of specifically engineered vinyl resins.

We suggest you keep this chart handy—to help you pin-point the right resin for *you*—at a glance.

Firestone

Industry's most complete line of vinyls engineered to your specific needs

EXON CHARTS SOLUBILITIES to help you choose the resin with properties Pin-Pointed to your special needs!



EXON 450 Ideal for strip coatings. Good solubility, tensile strength and durability.

EXON 461 A unique florine-containing resin combining high solubility, unusual chemical resistance, heat stability and weatherability.

EXON 470 Excellent adhesion to metals, alkyd and vinyl surfaces. Compatible with wide range of drying oils, alkyds, phenolics, melamines. High solubility in inexpensive solvents.

EXON 471 Excellent for weatherability and durability in a protective coating. Corrosion resistant. No measurable change after sunlamp exposure for 360 hours as 1 mil film.

EXON 481 Makes possible colorful, abrasion-proof, washable coatings that resist fading or cracking.

EXON 485 For superior strip coatings. Lower viscosity makes application easier and shelf-life better. Good clarity.

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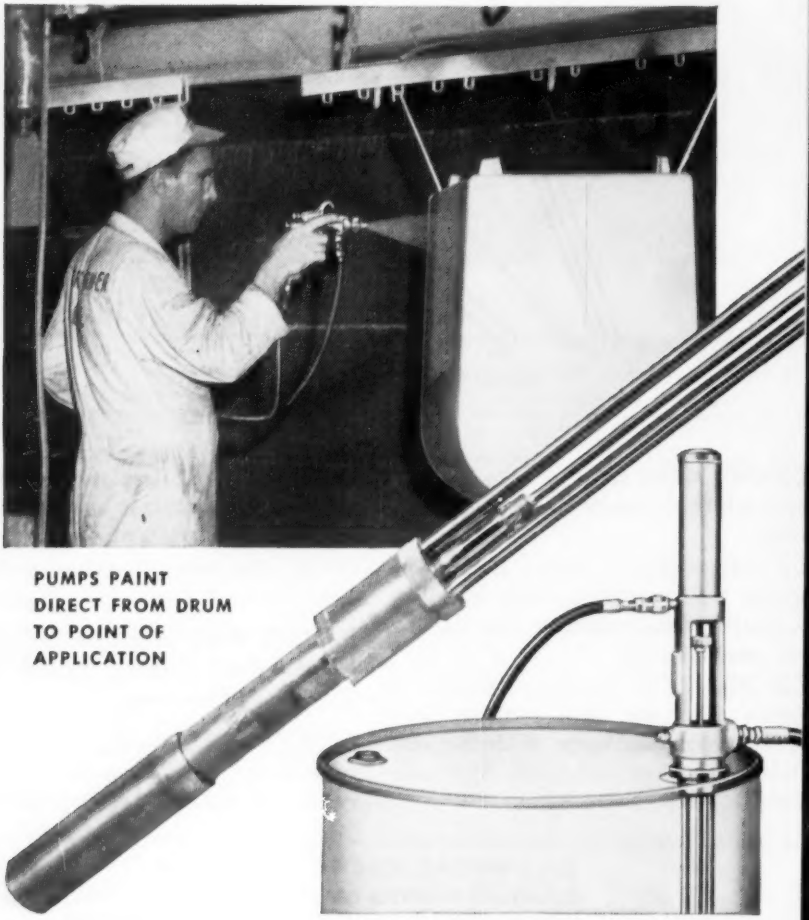
Smoother delivery

NEW ALEMITE

VERSATAL Paint



PUMPS PAINT DIRECT FROM DRUM TO POINT OF APPLICATION

wice the power!

Pump

gives farther, faster, fully controlled delivery of all paints and solvents!

Versatile! Built for Rugged Service! The new Versatal Model 7880 Paint Pump brings new power, new savings, to any paint spraying system . . . using any number of colors, any number of spray outlets! Pumps all paints from original drums or mixing tanks directly to point of application . . . spray booth, production line or outside maintenance. Offers twice the power of the average paint pump. Lightweight, too—only 20 pounds!

Check these exclusive Versatal Construction Features!

Separated, Fully-sealed Air Motor! New open frame construction completely separates air motor from lower pump assembly . . . paint never comes into contact with motor.

New Packing Gland Assembly! Designed below surface of material. Never any messy packing gland leakage.

New "Tri-Flow" Pump Tube Design! Delivers paint through three separate tubes for volume flow.

Material Outlet! ¾" p.t.

- **Fits any Standard Drum Bung!** New built-in bung adaptor fits any standard bung-type drum. Simplifies drum-changing without disconnecting hose. No need for special cover.
- **2 to 1 Ratio!** Provides paint pressure *double* the air pressure applied to pump!
- **New Adjustable Pump Tube Section!** Fits all 400-lb. drums.
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- **Double Action!** Twice the power! Pumps on both up and down stroke.

Write for free catalogs and complete information, to:
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STEWART SW WARNER ALEMITE Versatal SPRAY PUMP EQUIPMENT

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Ralph J. Wirshing
Head, Chemistry
Research Department
General Motors Corp.

SPOTLIGHTING FINISHING PROGRESS

What We Expect of Finishes for the Automotive Industry

If we were to change the title of this talk to read "How the Automotive Industry Would Like to Protect and Decorate Its Products," I am afraid I would make myself very unpopular with this group.

We might suggest that we would like to incorporate color and durability right into the metal, thereby doing away with all paint-type finishes. This might bring about the finish of the Finishing Industry insofar as automobiles are concerned.

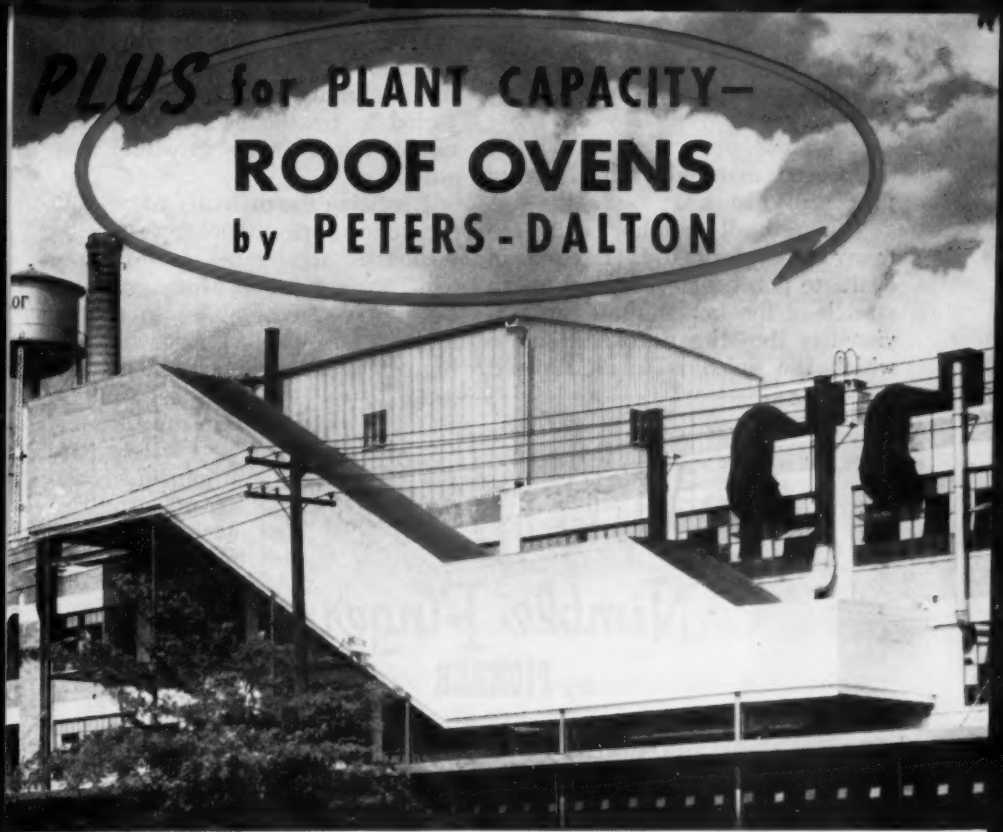
In order not to make myself completely unwelcome to those present, I will refrain from referring to these rather long range hopes and desires. Instead I will try to point out what we believe to be the faults of our present finishing systems with the hope that you who are listening may be able to help us solve some of our problems.

When we speak of painting automobiles we are talking about big business. In 1955 approximately fifty million gallons of paint materials were used to decorate and protect the millions of cars that rolled off the assembly lines.

As you probably know, automobiles are finished in two different types of finishing materials, nitrocellulose lacquer and synthetic enamel. Since all General Motors automobiles are lacquered and all others enamelled, the usage is divided about equally between the two materials.

The manufacturers of automobiles are continually striving to give their customers the best finish possible. Working toward this end, they spend large amounts of time and money in testing not only pres-

For more data on advertisement on opposite page, circle 170 on Reader Service Card



The above photo illustrates part of a Peters-Dalton installation in the plant of a major appliance manufacturer. Here, as in most plants, manufacturing floor space was at a premium. Literally adding many hundreds of square feet to plant capacity, dehydration ovens were built on the outside, through which assembled compressors are conveyed roof-high and returned to final assembly stations. The large enclosure on the roof-top houses heating equipment. Working in conjunction with plant officials, P-D engineers installed the ovens as shown — thus eliminating the waste of much valuable plant space that otherwise would have been used for the conveying of parts to and through the ovens.

Whatever your finishing needs . . . whether for power spray washers, paint spray booths, air make-up systems, dust collection systems, or ovens of all types . . . call, with confidence, upon the more than quarter century of experience enjoyed by Peters-Dalton in designing, engineering and building this equipment for American industry. Regardless of the size of your requirements . . . from single units to multiple or large systems or continuous operations . . . your production needs can be met with complete satisfaction and assure years of dependable service. Just write, wire or phone — we'll be glad to tell you more.

Representatives in Principal Cities

- *Hydro-Whirl Paint Spray Booths*
- *Industrial Washing Equipment*
- *Drying and Baking Ovens*
- *Hydro-Whirl Dust Collecting Systems*

PD Peters-Dalton INC.
A SUBSIDIARY OF DETROIT HARVESTER CO.
17008 Ryan Road . . . Detroit 12, Michigan

ently used materials, but also new proposed finishes.

You are all familiar with the many laboratory tests devised to evaluate paint materials, but by no stretch of the imagination can you visualize the climatic conditions to which the finish is to be exposed nor the indignities it will be subjected to by the owner, especially not in the sequence in which they will occur.

Realizing the difficulty of reliably predicting performance in service by means of accelerated laboratory tests, we in General Motors decided to examine automobiles in service and see for ourselves just what was happening to our finishes. The final test is run by our customers, who allow the automobiles to stand on the streets and in parking lots, where we are free to go and evaluate the results.

Annually, a group composed of men in charge of painting in our various divisions is joined by technical representatives from our principal paint suppliers and companies that supply metal treating chemicals. With such a group we feel that we have the advantage of years of experience in the formulation and application of paints for automobiles. Then

NEW! Tissue-Thin Pylox™ Gloves

Nimble Fingers™

by PIONEER

Thinner than surgical gloves for jobs requiring extreme finger sensitivity. Wear all day in comfort. Resists normal acids, alkalis, oils, greases, some solvents. Smooth outside, textured inside . . . reversible for non-slip grip. Sizes small, medium, and large. Let PIONEER help you select proper gloves for your job from the complete PIONEER line.

The PIONEER Rubber Co.
285 Tiffin Road, Willard, Ohio, U.S.A. V-10

Please send me:
The name of my nearest PIONEER Glove Distributor.
1956-57 PIONEER Industrial Glove Catalog.
Hand Protection Clinic glove recommendation for job described in enclosed letter.

Firm_____

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City_____ Zone____ State_____

Signed_____

Mail This Coupon Today

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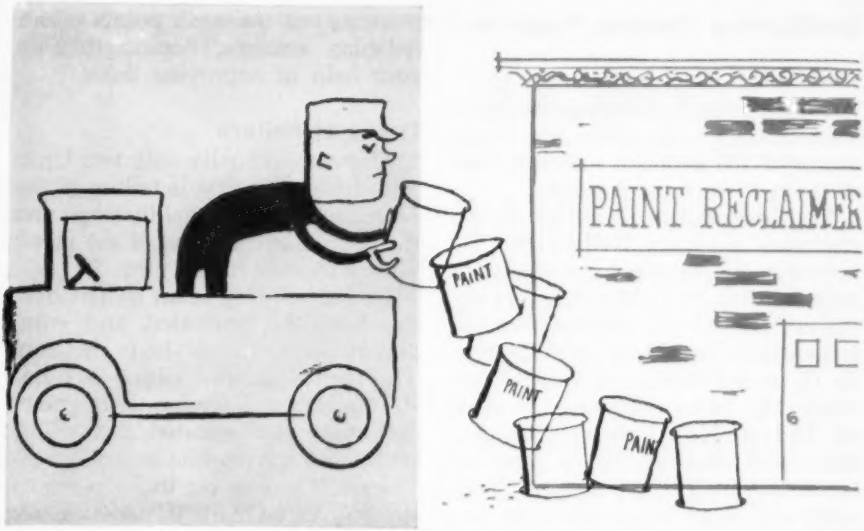

Don't sell it to Paint Reclaimers...

THERE'S NO WASTE WITH

Airless

SPRAY PAINTING

How much paint do you sell to paint reclaimers a year?

If your painting volume is big enough to sell ANY paint to reclaimers, investigate the Bede Airless Spray Coating process today.

Imagine a new coating process that saves as much as 50% finishing material!

It's here . . . ready to save you money in many ways . . . labor costs, materials, time and expensive auxiliary equipment.

Ask for more information today.

TODAY IN PAINTING . . .
AIR IS FOR THE BIRDS!

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HOT SPRAY AND AIRLESS SPRAY COATING EQUIPMENT

Jackson St., Dept. 1 YUkon 8-4473 Amherst, Ohio

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too, if things are wrong, the men immediately responsible are made aware of the problem and can take steps to correct the trouble.

We operate in teams of three, changing partners frequently. We record make, year, color and significant failures on IBM cards. We examine, one, two and three-year-old automobiles in Miami, Washington, D. C., and Detroit and usually one other city. In the past we have visited Dallas, New Orleans, Minneapolis and Seattle. Each year we have examined between seven thousand and eight thousands cars, our own and competitiors.

The results of these surveys are what I would like to talk about, pointing out the weak points of our finishing systems, hoping to gain your help in improving them.

Types of Failure

There are actually only two kinds of failures. The first is failure of the film itself due to weathering, and the second is corrosion of the metal after a rupture of the film.

In the building of an automobile, the body is fabricated and completely painted in the body division. The rest of the car, which includes the hood, front fenders and gravel deflectors, is fabricated and painted by the automobile assembly divisions. These parts that are made by the automobile divisions are known as sheet metal. Since these parts are finished in a different manner than the body, I will refer

Electro
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Cold Stripper
ELECTRO T415 also strips epon and epon-modified coatings in minutes.
NON-FLAMMABLE
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High bake enamels, japans, primers, hammers, 3M products (Scotchlite Brand Reflective Sheeting) come off quickly in ELECTRO COLD STRIPPER.
No heat, no current. Reduce costs, occupational hazards and stripping time to seconds or minutes instead of hours.
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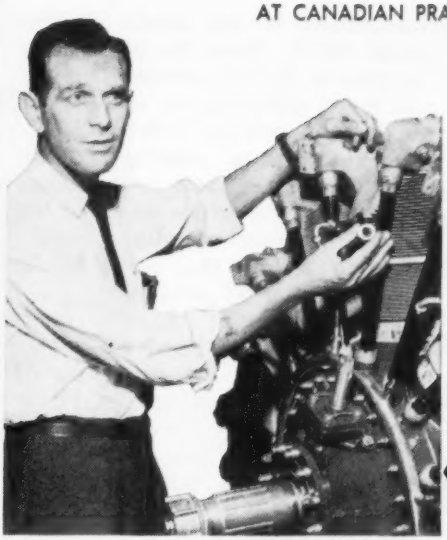
AT CANADIAN PRATT & WHITNEY AIRCRAFT . . .



ALMCO
barrel finishing
SAVES 97%
on deburring and finishing of spark plug bushings

CUTS COSTS BY $2,430 — Maurice Harrison, Supervisor of Process Planning, shows threaded spark plug bushings deburred and finished with Almco equipment and processes.

SAVES .10125 ON EACH BUSHING — Deburring and finishing spark plug bushings formerly cost $104.20 per 1000 when CP & W used speed lathes, portable power tools and other hand methods.

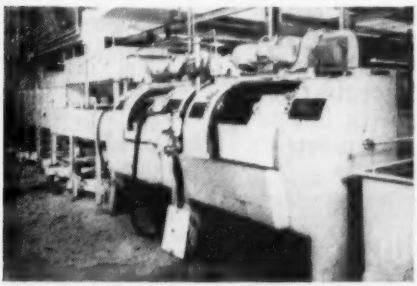
After installing two DB-200 Supersheen units, records showed a cost cut of 97%. This equipment turns out 1000 bushings in 45 minutes, saves $101.25 per 1000 in finishing costs, releases grinders and finishers for other duties.

This year CP & W will process 24,000 spark plug bushings, *save $2,430 on this one part alone.*

Before installing controlled-type barrel finishing, inspectors returned for re-work an average of 125 bushings from each 1000 (12½%). Almco Supersheen equipment and processes now finish these parts to a degree of uniformity that is virtually free of rejects.

DESIGNED FOR MANY METAL FINISHING OPERATIONS — Almco equipment and processes are also used for descaling, degreasing, grinding, burnishing, work-hardening, rust-inhibiting, polishing, etc.

Write for address of Almco sample processing lab or branch office in your area. Your sample parts will be processed promptly to your specifications. There's no obligation for a complete report.



Two DB-200 Almco machines, using Supersheen bonded abrasive chips and compounds, deburr and polish 1000 spark plug bushings in 45 minutes at CP & W.

SEND FOR FREE 52-PAGE BOOK

Full of facts and processes on barrel finishing. Includes detailed cost chart on finishing of typical parts. Send for your copy today.

ALMCO

DIVISION OF QUEEN STOVE WORKS, INC.

82 Marshall Street • Albert Lea, Minnesota

Sales and Engineering Offices in Chicago, Detroit, Los Angeles, Newark, New Haven, Philadelphia and London, England

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to and point out different types of failure both on the body and sheet metal.

The failure of the film can be divided into several classes: chalking, cracking or checking, blistering, and chipping. Chalking is a dulling of the film brought about by the disintegration of the binder in the paint, which allows the pigment to lie loosely on the surface. This necessitates polishing to restore the finish to its original luster.

Checking is in reality a fine cracking and is more serious than chalking, since, as the depth of the cracks increases, it is almost impossible to restore the finish to its original luster by polishing.

Blistering is perhaps the worst type of film failure, since in order to restore the car, the entire film must be removed.

Chipping is removal of the paint by abrasion, as by gravel thrown up from the road or by the door of the car being thrown open and allowing the edge to strike another car or the side of the garage.

As you know, lacquer, after spraying, must be polished to bring it to a high luster. Since this is done with rapidly revolving pads and an abrasive compound, and since

WHEN YOUR WORK SPEAKS FOR ITSELF— DON'T INTERRUPT!

We feel that our work for nearly a quarter century does speak for itself thru the development of Cleaning Compounds and Drawing Lubricants specifically designed for industry.

Worthy of your attention is—

APEX "749" Cleaning Compound

--designed for use in spray washing machines for removal of chlorinated and pigmented drawing lubricants. Light concentrations, coupled with long solution life, promote its economical use.

Your Inquiry Will Be Appreciated

Apex ALKALI PRODUCTS CO.

A complete line of Cleaning Compounds for the Metal Finishing Industry

Main and Rector Streets • Philadelphia 27, Pa. • IV 3-3939

SYRACUSE BOSTON DETROIT ATLANTA PITTSBURGH WEST HARTFORD

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you can eliminate

THIS messy waste and container transfer

with the NEW air-operated BALCRANK® PUMP for paint

Jet Power

For over 50 years Balcrank has served the Machine Tool and Automotive industries, specializing in pressure-pumping of oils, greases, viscous and abrasive materials.

NOW — Balcrank research and the best engineering skill have developed a NEW pump for paint and allied products.

New design provides for trouble-free handling of all paints, including ferrous oxide and other abrasives commonly affecting pump service.

Balcrank Paint Pumps and Accessory Equipment installations have already established proven performance records. Our Engineering Staff can adapt this experience to your particular needs.

Balcrank Pump assemblies for paint shops

- Pump primer or finish materials at HOT or cold temperatures.
- Provide constant pressure and volume at spray guns without pulsation.
- Maintain continuous flow without pressure in or on the container.
- Supply up to 8 or more spray guns — either syphon or pressure type.
- Include an operated propeller type agitator to insure uniform mixing.
- Eliminate drum-transfer waste and costly clean-up time.
- Eliminate conventional pump packing seals — which wear, then leak.
- Models for 55 gallon drums, with or without guides, 5 and 10 gallon pails or line systems out of storage tanks.

Can we send you a copy of the new FREE catalog?

Our sales representative has a story that will make "dollars and sense" to you. Address your inquiry to Department 21

INDUSTRIAL BALCRANK PUMPS

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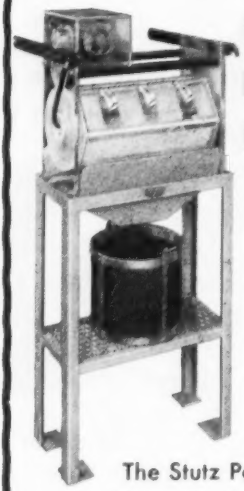
STUTZ



PORTABLE PLATING BARRELS

The Stutz Portable Barrel is made in 2 standard sizes with cylinders having inside dimensions of 6" x 12" and 8" x 18", I.D., and smaller upon application. Standard opening can be furnished as required.

★ **Baskets in perforated metals or wire mesh.**

★ **Load/Unload Stand for convenient and fast handling of work load.**

We invite your inquiries.

GEO. A. STUTZ MFG. CO.

4410 Carroll Ave., Chicago 24, Ill.

Serving Industry 35 Years

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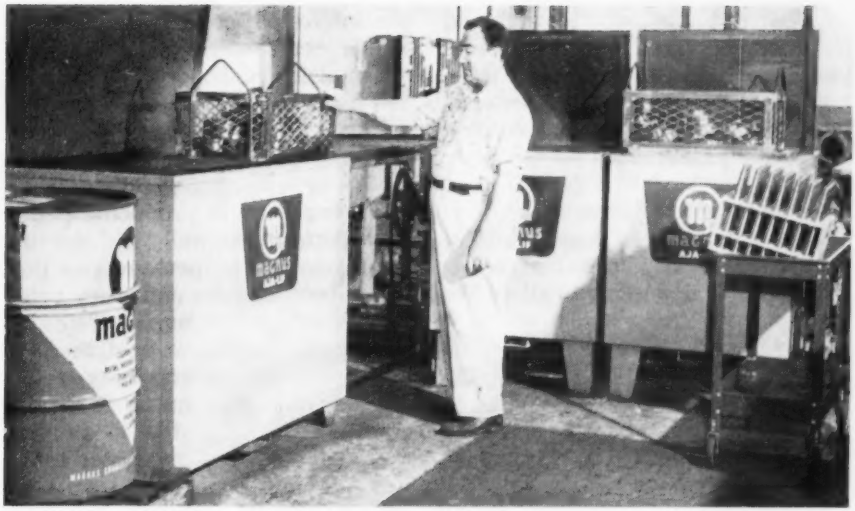
the men doing the job cannot exert exactly the same pressure on all parts of the car, the paint is rubbed thinner in certain spots than in others. These thin spots cannot be detected in the plant. However, when the dealer or the customer polishes the car, the paint is sometimes entirely removed in these thin spots, allowing the undercoat or bare metal to show. These we call "rub throughs." As the car ages and is polished several times, the situation gets even worse.

The second type of failure is corrosion caused by a break in the paint film, allowing the metal to become exposed. The gravel deflector is the horizontal piece of metal between the rear bumper and the lower part of the body. The joint between the deflector and the body seems to be a vulnerable point for corrosion to start. Change in design is rapidly eliminating the gravel deflector. This is the second change in design that has eliminated a troublesome spot. The other was the fender welt. The rear fender was made an integral part of the body, thereby doing away with the fender welt. From these examples you can see that manufacturers are aware of their problems and are taking steps to overcome them. It is entirely possible that paints with more corrosion-resistance might help in certain areas.

The public demands automobiles that are decorated with chromium-plated trim. This trim we refer to as applied moldings. These are attached to the body or sheet metal



Versatile Production Line Cleaning

At initial equipment cost under $4,000

The above photo shows a three-stage Magnus Aja-Lif cleaning setup used for cleaning aircraft component parts. Performed here are three operations:

1. Cleaning with mechanical agitation using Magnus #71 cleaning compound. 2. Vigorous agitated hot water rinse. 3. Anti-rust treatment with Magnus 26-N.

The cost of this versatile setup? Well under $4,000.

The use of Magnus Aja-Lif cleaning machines offers many advantages . . . cleaning time can be varied . . . stages can be by-passed . . . additional low-cost Aja-Lif units can be easily added to perform additional operations . . . the low-cost and small space required permits departmentalized cleaning to speed production.

For further information on any production line cleaning problem, write Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

magnus

Industrial Cleaning Division

MAGNUS CHEMICAL CO., INC.

— a world-wide organization specializing in cleaning and protection of all surfaces.

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by means of clips, which are forced through holes and hammered into place. Corrosion starts around these holes and spreads until it extends beyond either edge of the molding and becomes apparent to the owner. This type of trouble has been with us for a long time.

We would like to have finishes with certain properties that relate more specifically to application. We are interested in faster-drying materials, non-sanding undercoats, water-emulsion finishes (to eliminate fire hazards) and better-filling undercoats.

We believe that the Finishes Industry is to be congratulated for the job being done in producing paints that perform so well, and for the improvements in performance that have been made and are being made. The advent of the new acrylic-type lacquers is a big step in improving luster retention. Improvements have also been made in improving luster retention of maroons in the last six years.

Adapted for publication in PRODUCTS FINISHING from an address by Ralph J. Wirshing, head, Chemistry Research Department, General Motors Technical Center, before the 69th Annual Convention of the National Paint, Varnish and Lacquer Association. Published by permission of the Association.

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Page 64

Practical Applications of Modern Products

New Finishing System Slashes Painting Time

Installation of a new paint-finishing system has cut time required for enamel finishing of attachable refuse containers by 40 per cent. So states Elmer Leach, president of the Leach Company of Oskosh, Wisconsin, manufacturer of Packmaster waste-collection units. Mr. Leach attributes the success of the setup to new equipment installed by the company, which includes a conveyor, a degreasing chamber, a gas-fired drying oven, and two water-wash paint-spray booths.

The Leach Packmaster is a completely covered refuse collection unit. It is optionally equipped with an attachable container. The latter is a 1-cubic-yard steel loading box on wheels. It attaches to the Packmaster and is automatically emptied without being lifted off the ground manually.

Both the containers and the Packmaster are finished with corrosion-resistant enamels, baked on to increase durability. The enamel is applied in a nearly continuous assembly line operation, while the original system required moving the units through the system manually, on dollies.

Preparing the metal for finishing is done prior to assembly. Steps in this process include shot blasting, power sanding and metallizing (to fill in any imperfections that have developed during fabrication). The container is left smooth and ready for the second stage in the preparation cycle, degreasing. It is assembled at this point and lowered into a trichlorethylene vapor degreaser, in which all grease and oil are removed from the metal. The container is clean and ready to be painted as it emerges from the degreaser.

Assembled containers are now attached to an overhead conveyor, which takes them to the finishing department. Painters use Binks No. 7 guns to apply primers and finish coat in two Binks Dynaprecipitor water-wash spray booths. Both booths are eight-foot-wide, standard floor-type booths.

During painting operations the Dynaprecipitors provide high-velocity "curtains" of water flowing down the rear walls of the booths. Air is drawn through these continuous water curtains by exhaust fans on the booths. Overspray paint particles in the exhaust air are removed as they pass through these water curtains. The water flushes overspray particles into collecting pans. It is then recirculated by Binks recirculating pumps, so that it can be used again in the water curtains. Openings in the sides of the

booths permit the conveyor to enter and leave the booths while carrying the containers being finished.

In the first booth, operators apply a wash primer, which improves adhesion of paint and at the same time increases corrosion resistance. Containers are then removed from the conveyor and allowed to dry.

When dry, the containers are again attached to the conveyor and carried through the first spray booth, where a coat of phenol-modified primer is applied. The conveyor transports the containers to a gas-fired drying oven, where they are baked. It then shuttles them to the second spray booth, where an alkyd resin enamel is applied. The painted parts then pass through an oven for baking of the final finish coat. The baking temperature for both primer and finish coat is 400 deg. F.

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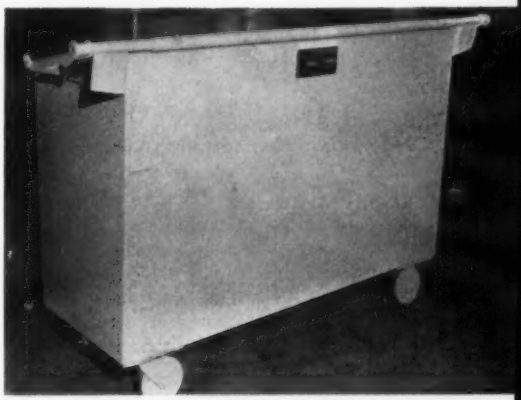


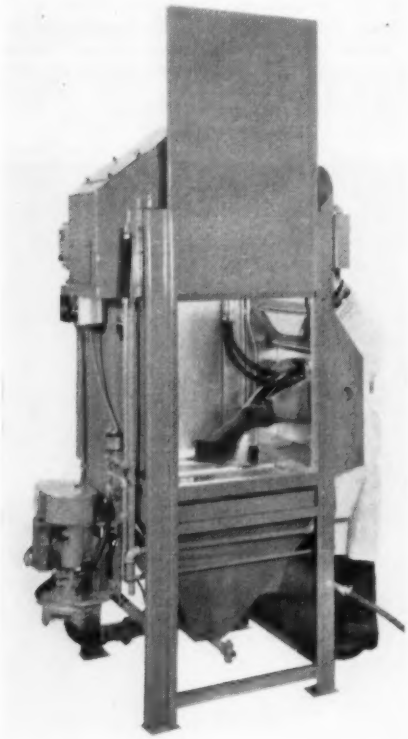
Fig. 2—A finished attachable refuse container. It has received a wash-primer coat, a primer and an alkyd resin enamel finish coat. Latter two coats were baked at 400 deg. F. in a gas-fired oven. (Photos courtesy Binks Manufacturing Co., Chicago, Ill.)

Fig. 1—A Leach Company worker uses a Binks Model 7 spray gun to apply primer on an attachable refuse container. Paint is being applied in a Binks Dynaprecipitor water wash spray booth. Water curtain, which catches overspray, is visible in back of booth.

Facts About Vapor Blasting

By H. F. PATIN
Vapor Blast Manufacturing Company

Vapor blasting is similar to dry sand blasting or steel shot blasting, but it uses finer abrasive materials so that tolerances on precision parts may be held. The abrasive is mixed with water and other chemicals and kept in a uniformly agitated suspension. This slurry is fed to the blasting gun by a motor-driven centrifugal pump. The pump merely feeds the abrasive particles to the blasting gun. Compressed air introduced at the gun imparts velocity to the abrasive particles; thus atomized water and abrasive particles moving at a high speed abrade the surface being processed.



A Vapor Blast Machine in use, with side door up to show interior of the cabinet.

To operate the Vapor Blast machine, the operator performs the following steps:

1. Turn on observation lights.
2. Fill hopper of the machine with water and chemicals to the proper level.*
3. Turn on the pump drive motor.
4. With pump in operation, charge hopper of the machine with abrasive (selected to suit individual requirements).*
5. Turn on ventilating fan.
6. Turn filter wash selector switch to automatic position.
7. Insert part to be vapor blasted into machine, either through side loading doors or left armhole.
8. Vapor blast the part, holding it with the left hand and the gun with the right hand.
9. Operator turns on the air to the gun with his right knee and directs blasting stream on metal surfaces.
10. To improve visibility, the operator washes the observation window and light well glass simultaneously with fresh water, by means of a valve controlled by his left knee.
11. Part is removed from the machine for washing.

In actual operation, the pump on the Vapor Blast machine delivers approximately 30 g.p.m. of slurry containing 35 per cent abrasive solids by volume. Approximately six g.p.m. are delivered to a standard gun, while 24 g.p.m. are diverted back into the hopper. This circulation creates the agitation necessary to maintain abrasive particles in suspension. To improve

*Only when machine is being charged.

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visibility, the exhauster fan changes the air approximately five times a minute. The fan pulls air through a ventilating unit containing a metallic filter, which is automatically washed by spray nozzles for 90 seconds at half-hour intervals. For manual operation, the operator manipulates both the part and the blasting gun, employing the proper angle, air pressure and gun distance for the result desired.

Types of Abrasive

Various types of abrasives are used to attain the desired results with vapor blasting. In addition to choosing the proper type of abrasive, the grain size must be considered to give the necessary abrading action. The abrasives used are as follows:

1. *Organic abrasives* (walnut shells, peach pits and similar materials) are the mildest of all abrasives, and are used for removal of soft materials like paint, carbon and grease, without disturbing underlying metals.

2. *Novaculite* is an Arkansas stone. It is over 99 per cent pure silicon dioxide, and is commonly called "Washita" Stone. It is available in the finest mesh of any of the abrasives used, and is used in precision, close-tolerance work, such as tool honing. In fine feather burr removal, this abrasive creates a fine, matte-type surface, while maintaining a low micro-inch finish on adjacent areas.

3. *Silica* is also a natural abrasive,

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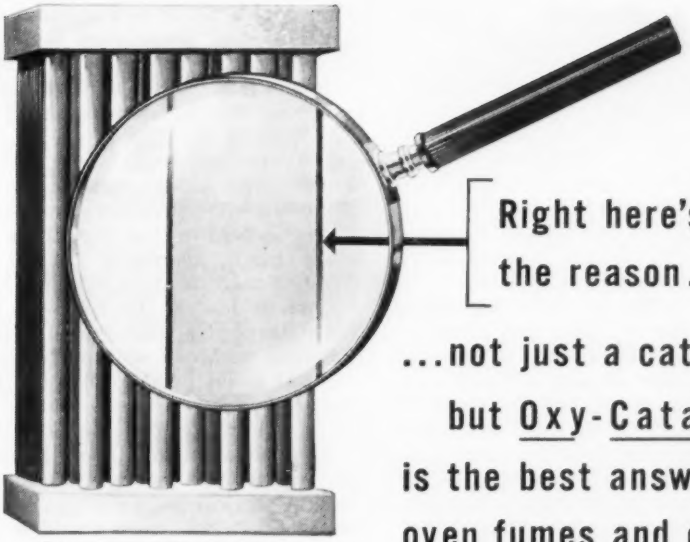


Enlarged cross-section drawing of an individual rod in an Oxycat unit

Right here's the reason...

...not just a catalyst but Oxy-Catalyst is the best answer to oven fumes and odors

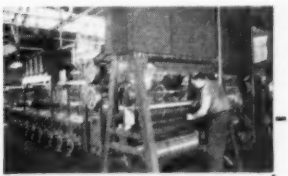
The secret lies in the .003-in. film on the porcelain Oxycat carriers. It's this more efficient catalyst which Oxy-Catalyst uses, a patented combination of alumina and platinum on porcelain, that gives better cleanup, better heat recovery, and longer catalyst life.

Oxycats can eliminate fumes and odors from drying ovens and other processes by oxidizing organic and combustible contaminants in the exhaust far more efficiently than any other catalyst ever developed.

To stop your oven fumes and odors—to recover waste heat—to reduce fire hazards and maintenance problems caused by troublesome condensates, Oxy-Catalyst offers a complete engineering service. We make the entire installation—engineered to your exact requirements—and we assume full responsibility for the performance of the equipment.

Oxy-Catalyst works closely with all leading oven manufacturers. And new ovens can be designed with the catalyst as an integral part of the oven's heating system. So when you order new ovens, specify Oxy-Catalyst equipment.

If you would like to compare—to see for yourself the remarkably high efficiency of an Oxy-Catalyst installation—fill in this coupon, or write on your business letterhead, for complete information now.



Oxycat units were installed at the end of this vertical drying oven to oxidize troublesome solvent and varnish fumes at John A. Roebling's Sons Corporation, Electrical Wire Division Plant. This installation has been operating now for over 4 years.

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and is economical because of low size-reduction costs. It is over 99 per cent SiO_2 and is more "aggressive" than Novaculite. Silicas are used for removing larger burrs and for faster scale removal. All but the finest silicas produce a higher micro-inch reading (rougher surface) than Novaculite.

4. *Quartz* is a natural abrasive composed of over 99 per cent SiO_2 and is more "aggressive" than the abrasives mentioned previously. It has a longer life and is more expensive because reduction costs are higher. Its hardness is seven on the Moh Hardness Scale. Quartz is used in removing more tenacious burrs and in removing scale.

5. *Garnet* is another natural abrasive. It is more "aggressive" than any of the silicon dioxides. It will remove burrs that cannot be removed with quartz, silica or Novaculite. It is higher on Moh's Scale of Hardness than silicon dioxide. Containing some silicon dioxide, it is mainly aluminum oxide and iron oxide. Garnet abrasives have long life, but produce a rather coarse finish.

6. *Aluminum oxide* is an artificial abrasive with a high specific gravity, 3.8 to 4.2. A refractory product, it is more expensive than the silicas and is the most "aggressive" of all the abrasives used in vapor blasting. Even chrome oxides can be removed with this material in a short period of time. It is nine on Moh's scale of hardness, and will resist breakdown for a long period of time.

7. *Other refractory abrasives* used include silicon carbide, beryllium oxide, boron and boron carbide. Although these are very "aggressive" abrasive materials, costs would be prohibitive for use in vapor blasting, except for limited applications. Pure boron costs about $250.00 per pound.

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"To achieve a fine finish on beautiful sterling silver flatware, you start with a smooth, uniform surface," says Gorham Mfg. Co., leading silver–and goldsmiths. "To eliminate major defects in the metal before final finishing, we've found that the most efficient method is to use Paramount Felt Bobs with a mixture of fine pumice and oil. Paramount felt wheels and bobs are ideal for polishing flatware and holloware. Easily formed and having an affinity for pumice and oil, they produce a better surface than any other buff."
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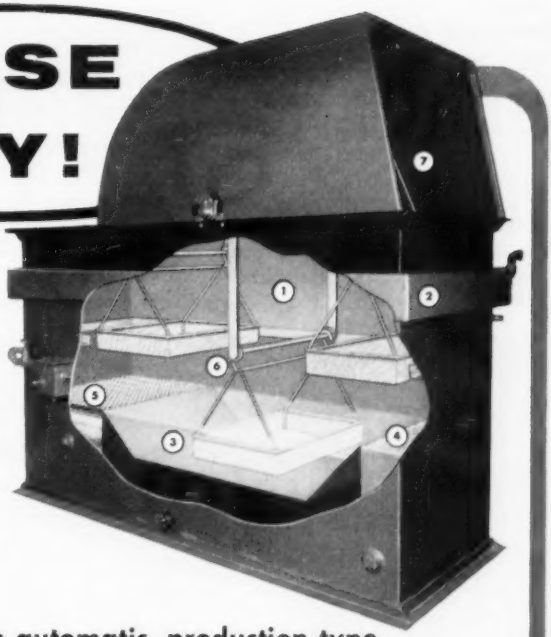

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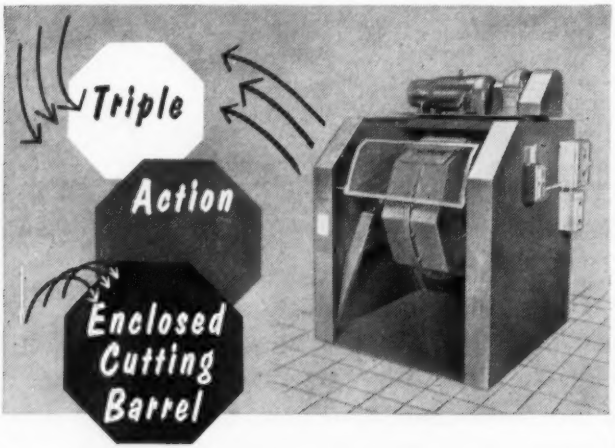
Practical Applications . . .

8. *"Brite Shot"* is an artificial abrasive, and although it is expensive, the additional cost is offset by its longer life. It is used to create a lustrous or bright matte-type finish, principally for decorative applications. Unlike other abrasives, which have angular particles, "Brite Shot" particles are spherical and do not fracture upon impact, but instead remain round spheres and gradually decrease in diameter.

How to Obtain Best Results from Vapor Blast

To get optimum performance from Vapor Blast machines, certain precautions must be observed. Parts covered with oil should not be processed before removing the oil. This oil forms an emulsion scum, which reduces blasting efficiency and causes stains. A single hopperload of blasting solution cannot be used to finish ferrous and then non-ferrous parts; the steel chips will damage the softer non-ferrous parts. Over-blasting must be avoided on precision parts, as this will destroy size tolerances. To blast long blind holes, a special gun must be used. A rust inhibitor in the hopper solution is necessary. Foreign parts should be kept out of the hopper solution, as they will lodge in the pump impeller openings and reduce pump capacity. Air pressure must be regulated for the type of work being processed. The correct ratio of abrasive to so-



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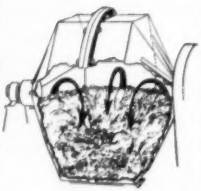

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THE FINISHING TOUCH

ALUMINUM FINISHES

by A. B. HOEFER
vice president
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Will Anodized Aluminum Replace Nickel-Chrome Finishes?

Affirmative answers to this question are revealed in several current business publications and our own sales figures.

Speeding the change is the continued tight supply of nickel. Manufacturers have been forced to look for substitutes for nickel and like the results anodized aluminum have given them.

A trend is developing. Volume of Stevens Automatic anodizing equipment sold in 1955 was nearly double the volume for the two preceding years. At the same time, sales of Stevens compositions used in buffing and polishing aluminum were showing a 50% increase.

Frederic B. Stevens, Inc., manufacture equipment for both nickel-chrome and aluminum finishes. We believe both types of finishes will increase in demand but at the moment the interest in aluminum is high.

If you are considering aluminum for your product, you can be assured that aluminum parts can be bright anodized and finished to compare favorably with the fine finish of chrome plate. In addition, aluminum can be dyed, resulting in non-fading colored finishes.

THE TREND INDICATES MORE ANODIZED ALUMINUM IN 1957 and 1958!

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The increasing demand for more color and more elaborate styling is rocketing the use of anodized aluminum for tumblers, kitchen utensils, refrigerator components, lighting reflectors and many other items.

The 1957 motor cars are using anodized aluminum for medallions, kick plates, grilles, window frames, etc.

To obtain the finest aluminum finishes – at the lowest costs – see your Stevens Representatives. Stevens' experience in furnishing complete anodizing equipment assures you of the latest techniques and the best in automatic machines. Let us discuss your requirements with you.

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Why Use A "Copy-cat" Finger-Buff?*

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The CHURCHILL Finger-Buff*

❖ Let the Churchill Finger-Buff* . . . the original Finger-Buff* . . . prove its effectiveness to you . . . prove its greater flexibility and faster cutting action!

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❖ Churchill Finger-Buffs* are made from sisal or cloth . . . always bias-cut . . . always top grade material . . . and in all sizes from 3" to 21" diameters.

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Practical Applications . . .

lution must be maintained in the hopper solution. Parts should be washed free of abrasive particles immediately after blasting. Blasting angle is important: 45 to 70 degrees for cutting, 70 to 90 degrees for peening.

Applications of Vapor Blast

Complex configurations can be vapor-blasted for scale removal or general cleaning. Vapor blasting can be used as an inspection method, especially for fine cracks and fissures, which are flushed out by the process. It can be used in salvaging parts which have grown or shrunk in heat treat: a controlled amount of metal is removed from male parts and female openings on extremely hard parts which cannot be ground because of the minor amount of size reduction required. Vapor blasting can be used for fit sizing, as bright spots occur on the matte finish, indicating a high spot. The process can be used to create minute residual compressive stresses in thin sections. Vapor blasting will reduce micro-inch finishes on complex configurations. This process can be employed to create various degrees of matte on plated finishes. Here the amount of reflectivity is a function of the abrasive type and mesh size.

Vapor Blasting cannot be used for removing heavy burrs if micro-inch finishes on adjacent areas are low and must be maintained. It is not suitable for removal of heavy burrs if size tolerances on adjacent areas are minimum and must be maintained. Vapor Blasting cannot create large radii on edges in an economical time. It will not remove large amounts of metal uniformly. Vapor Blast cannot uniformly remove any amount of metal from large areas. The process cannot be used for making large reductions in surface roughness, measured in microinches.

Formulators prefer Dow Alkali for efficient metal cleaning

Formulators with know-how start with Dow Alkali as the base in their top-quality metal cleaning compounds. Why? Because Dow Alkali delivers the high cleaning power they need. Formulations containing Dow Caustic Soda Flake and Dow Sodium Orthosilicate clean fast and thoroughly, leave metal parts and products free of dirt, grime and grease. Many plants have cut operating costs and increased efficiency by switching to a topnotch alkali cleaner made with Dow products. Why not give it a try? THE DOW CHEMICAL COMPANY, Midland, Michigan, Department AL607L.

YOU CAN DEPEND ON DOW

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Practical Applications . . .

Advantages of Liquid Honing

There are many advantages of vapor blasting. For example, Vapor Blast removes scale quickly. Surfaces produced are metallurgically clean and no hydrogen embrittlement takes place. A Vapor Blast tumbling operation for burr removal or finish requires only minutes. Vapor Blasting will remove internal burrs at intersecting hole junctions which are inaccessible to other deburring tools. Vapor Blast expeditiously treats multi-tooth metal cutting tools such as hobs and broaches. It is useful in all types of dies, such as forging, stamping, drawing, molding, forming, blanking and die casting dies.

Cleaning With Vapor Blast

Primarily, abrasives are selected for cleaning because they remove any type of contamination without creating a much rougher or higher microinch finish. Almost any type of cleaning can be done rapidly using Vapor Blast with the proper selection of abrasives and other variables. Various scales and oxides are easily removed, even the tough, green, chromium oxides. Besides speed in cleaning with Vapor Blast, areas which are inaccessible to other methods can be thoroughly cleaned.

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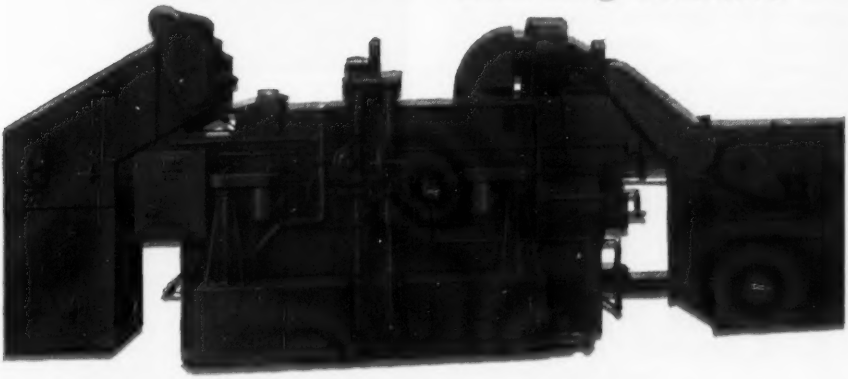
COST...SPACE...TIME...LABOR SAVER

the Ransohoff AUTOMATIC Parts and Tote Pan Cleaning Machine



Parts in tote pans placed in machine are automatically loaded into the drum type washer section. The empty tote pans automatically enter the integral conveyor type washer section above in an inverted position. At the discharge end, clean, dry parts are loaded in the same, clean, dry tote pan!

This machine was designed and built to wash, rinse and hot air dry a wide range of parts for a well known fastener manufacturer. It can also be designed for any combination of washing, pickling, neutralizing, phosphate coating, etc., parts, cleaning tote pans at the same time.

Savings in cost, space, time and labor are substantial since one machine does the work of two! Floor space requirements are cut in half, production rate is increased as desired and automatic features free operating labor.

Ransohoff engineers will gladly survey your cleaning requirements, suggest production-proved methods to cut costs and improve results in your plant. **For complete details, write: Ransohoff, Inc., 610 N. Fifth Street, Hamilton, Ohio.**

The oldest name... the newest ideas **Ransohoff**

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". . . chemists discovered that the gold powder must be substantially free of any lubricating oil . . ."

ed through the cooperative effort of Dodson Industries, Inc., 8600 Chestnut St., Kansas City, Mo., and Sewall Paint & Varnish Co., Kansas City.

Dodson Industries manufactures a line of low-priced black metal stands for television sets, phonograph record racks and coffee tables.

Dodson decided to consider finishing products with a gold dipping lacquer to add variety to their line and make their products more attractive. Preliminary attempts with metallic-pigmented lacquers were unsatisfactory because of difficulty in maintaining stability overnight. The lacquers had to be discarded at the end of each

Fig. 1—A set of end brackets for a television table being dipped into a gold-pigmented lacquer to simulate brass finish.

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Air-cooled VENTEX buffs, with permanent or removable metal centers are available for every job!

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work day. The problem then was to find a lacquer that would not gel and at the same time possessed adequate hiding power and proper draining for dip finishing.

The problem as posed by Dodson was ultimately solved by Sewall laboratories, utilizing half-second butyrate furnished by Eastman Chemical Products, Inc., of Kingsport, Tennessee, subsidiary of Eastman Kodak Company. Since metal-pigmented half-second butyrate lacquer possesses an unlimited pot life, the dipping operation can be maintained continually or halted at whatever intervals are desirable, merely by keeping the lacquer container filled as needed.

In the Dodson plant, the tubular steel is formed into the final shape through welding, and is conveyed through a caustic solution, rinsed, and then dipped in black paint. Those parts to receive the brass-like finish are likewise cleaned and rinsed and then are dipped into a drum of the gold butyrate lacquer. After a 10-minute drying period they are joined to the black-painted components.

Perfect blending of the gold powder and the vehicle in the lacquer to provide adequate hiding and draining of the metal parts is achieved through agitation of the lacquer solution in the drum. A slow motor-driven rotary mixer keeps the solution constantly agitated throughout the dipping procedure.

In developing their butyrate formulation, Sewall chemists discovered that the gold powder must be substantially free of any lubricating oil if the lacquer is to produce the desired quality of finish. Since many gold powders have a high content of oil as a result of their manufacturing process, they cannot be used in the formulation of butyrate lacquer.

While the metal furniture is intended normally for inside use, Sewall pointed out that the gold lacquer will withstand outdoor weathering satisfactorily. Butyrate lacquer possesses the additional advantage, too, of not being subject to yellowing and color shifting from the effects of sunlight.

For more data circle 3 on Reader Service Card

Fig. 2—Finished metal TV table made by Dodson Industries shows the black and simulated brass finishes. (Photographs courtesy Eastman Chemical Products, Kingsport, Tenn.)

★ ★ ★

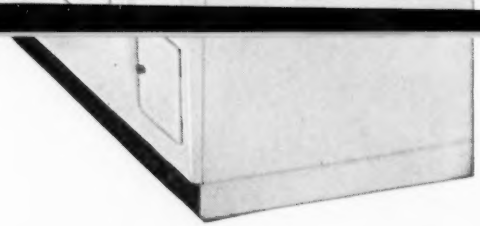
How to Prepare Aluminum for Porcelain Enameling

By J. ROBBINS
Oakite News Service

Application of porcelain enamel for protection and decoration of metals is a technique that is centuries old. Many examples of early decorative applications are still in excellent condition, proving that it has earned the

To page 82→

Like father, like son...
BUT NO HARM DONE!



What can a mother do when her refrigerator bears the mark of her son's recent snack or when her dryer has been used as a sandwich counter by Dad?

There's no harm done, however, when her appliances are finished with Glidden NUBELITE, "the boy- and man-proof finish." Spilled tomato juice, sticky jelly and other staining agents wipe easily from NUBELITE-protected surfaces without a trace or mark.

In addition to superior stain resistance, NUPON* primers and NUBELITE* enamels provide tough, flexible films that resist damage from abrasion, impact and corrosion.

All NUBELITE formulas can be varied to stress the resistance qualities required by your product. Write for complete information and finish data.

*A Glidden Trade-Mark

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The Glidden Company, Industrial Finishes Division, 900 Union Commerce Building, Cleveland 14, Ohio. Sales Offices and Factories: San Francisco, Los Angeles, Chicago (Nubian Division—1855 N. Leclaire Avenue), Minneapolis, St. Louis, New Orleans, Cleveland, Atlanta, Reading. *Canada:* Toronto and Montreal.

Industrial Finishes for Every Product

For more data circle **194** on Reader Service Card

name "The Lifetime Finish." Even some of the present-day applications of porcelain enamel on ferrous metals for industrial, household and architectural products originated at the beginning of this century.

The infant of this industry is porcelain enameled aluminum. It is an infant in age only, however. Large quantities are in use as aircraft carrier bulkhead partitions, interior and exterior building panels, and subway car interiors, to name only a few uses.

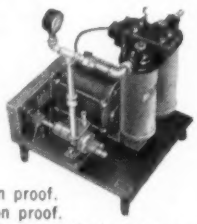
Porcelain enameled aluminum was developed in response to architects' demands for a lightweight material with enduring and attractive qualities. It reduces the weight of structures and thus reduces the number of steel supports necessary. It also adds to the products available with a porcelain finish the many forms and shapes into which aluminum can be extruded. These include intricate shapes required for windows and door sub-assemblies, decorative copings and moldings. Porcelain enameled aluminum can be cut, drilled, punched or sheared on the site of construction without objectionable flaking or chipping. It can be obtained in all colors from vivid to pastel, and in surface textures from glossy to full matte.

Fig. 1—One of the first applications of porcelain enameled aluminum in architecture was made in this building at New Jersey State Teachers College, Trenton, New Jersey.

Porcelain enameled aluminum did not result from the simple substitution of aluminum for steel, however. It took years of research and development by industry to perfect the technique of permanently bonding porcelain to this light metal.

The characteristics of aluminum called for changes in the methods that had been used for steel almost every step of the way. New frits had to be developed with a coefficient of expansion and the lower firing temperatures necessary for aluminum. Clean-

NEW Sethco FILTER PUMP
double cartridge self-priming
1-3 Gal./Min.



Model **CCGIE-120**—rated 1-3 gals. per min. for continuous filtration of solvents, lacquers, paints and all types of Product Finishing solutions.
FILTER ASSEMBLY: Double cartridge equipped with pressure gauge.
PUMP: Self-priming gear with relief valve set at 35 p.s.i.
MOTOR: ¼ H.P., explosion proof.
SWITCH: Manual, explosion proof.
PANEL: Bakelite, 14" x 16" x ½" thick; swivel ball bearing, rubber tire casters.
HOSE: two 10' lengths, solvent resistant, inlet strainer.
50' Electric Cable.
DIMENSIONS: 14" x 16" x 6" high, Wt. 65 lbs.

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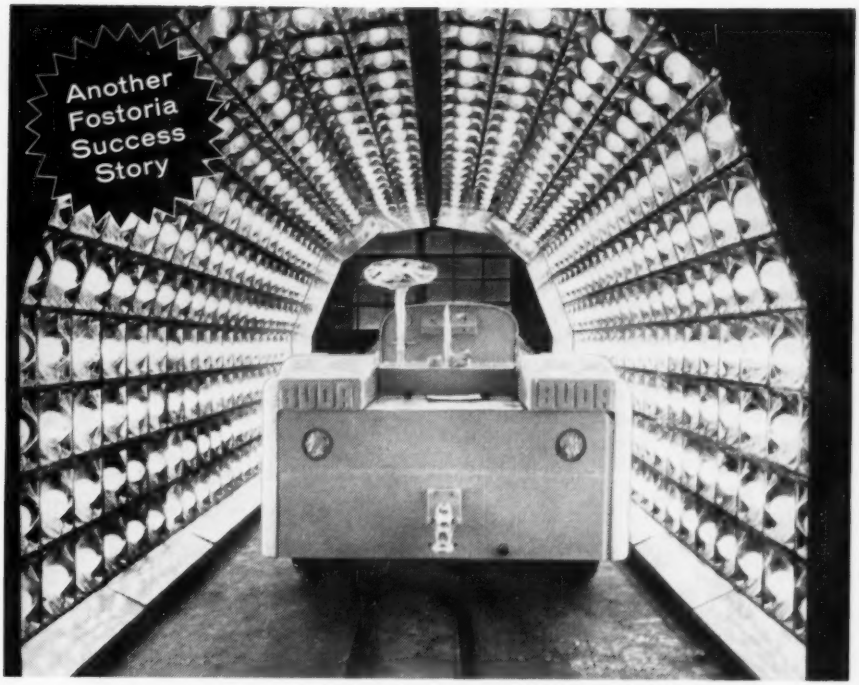

Infrared drying lets you drive this Allis Chalmers truck *10 minutes after you Spray!*

Until Fostoria engineers were called in by the Allis-Chalmers Buda Division at Harvey, Illinois, their newly painted lift trucks and tractors took from 8 to 48 hours to dry by air. Production flow was unsteady. Units piled up in drying area.

Now, fully equipped trucks minus only the seats—with gas tanks full—move through an 18-foot Fostoria infrared oven for a thorough paint-drying that takes *only 10 minutes!* Type G-30 infrared lamps in their Fostoria-engineered oven have a total connected load of 100 KW.

Fostoria's fast, uniform infrared heating has improved production astonishingly, Allis-Chalmers officials say, while maintaining their top quality finish. The radiant oven gets more work done at lower cost.

One of Fostoria's experienced sales engineers in your area will be glad to give you latest facts on our radiant equipment widely used for heating, degreasing, drying, baking and other industrial processing. He can also arrange a convincing demonstration in your plant if you are interested. See your directory or write us for his name.

Write for free 20-page book, "Radiant Heat—Applications Unlimited"

FOSTORIA PRESSED STEEL CORPORATION
Dept. 772 Fostoria, Ohio

fostoria

5516 A

Pioneer manufacturer of radiant equipment—components and complete ovens

For more data circle 196 on Reader Service Card

ing and metal preparation methods also had to be revised.

Research has shown that to obtain good results the aluminum must be cleaned, etched, deoxidized and treated for the removal of smut. One product developed for this purpose is a controlled alkaline etching solution, Oakite Composition No. 130, which accomplishes the first part of the operation: removal of oil, dirt and aluminum oxide. This material is used in a solution at 130 deg. F. After this treatment, the aluminum is rinsed and immersed in a room-temperature solution of Oakite Compound No. 34 to remove the smut caused by cleaning and deoxidizing. Another thorough rinse follows this step.

The metal is now ready to be treated in a caustic-chrome bath, which converts the surface into a complex chromate-aluminum oxide film. This complex metallic film assures a good bond between the porcelain enamel and the aluminum. Final rinsing must be done carefully, since the next steps are pre-firing and frit application.

The frit is sprayed onto the prepared surface, this film is oven dried, and the parts are then fired at 1,000 deg. F. Close temperature control (within plus or minus 5 degrees) is essential to prevent warping the aluminum and color variations.

The porcelain enameled product is now ready for shipment and use.

For more data circle 4 on Reader Service Card

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

For further information on any product mentioned in this issue of PRODUCTS FINISHING use Reader Service Cards inside front cover.

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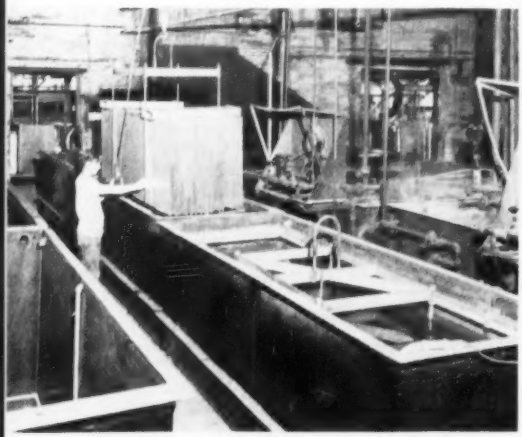

Fig. 2—Racks of aluminum panels go through a surface preparation cycle prior to porcelain enameling. Oakite Composition No. 130 removes soils and oxides, and etches surface. Oakite Compound No. 34 removes smut.

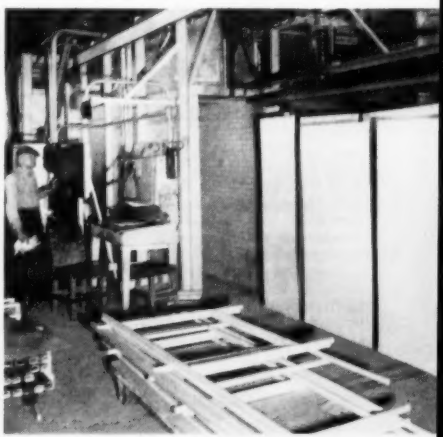

Fig. 3—Porcelain enameled aluminum panels after firing. These are bulkhead parts for an aircraft carrier. (Photos courtesy Oakite Products, Inc., New York, N. Y., and Ingram-Richardson Mfg. Co., Beaver Falls, Pa.)

TECHNICAL SERVICE AT YOUR FINGER TIPS

WANT quick, helpful suggestions for the solution of technical problems involving solvents and chemicals? Call your nearby member of the Solvents and Chemicals Group. Here's why . . .

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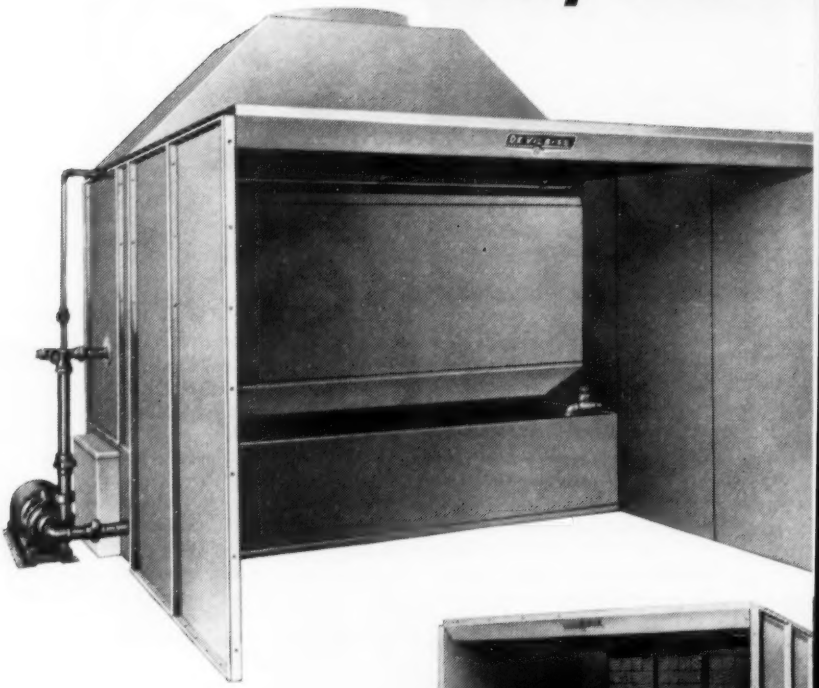
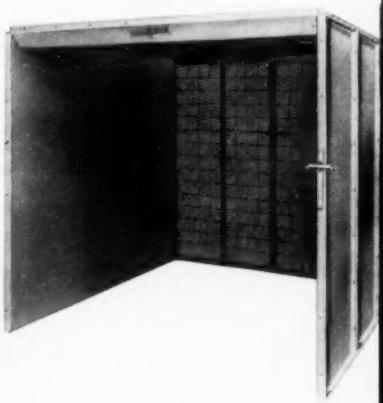
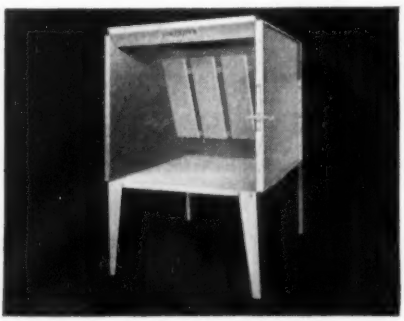


Water-Wash Spray Booths



Dry-Type Spray Booths



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DeVilbiss Spray Booths

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Mass production of standard panel units means more value for your spray-booth dollar. Erection costs less because your own crews can assemble DeVilbiss booths easily. Uniformly sized panels align accurately, fit securely, and are self-reinforcing for solid construction.

Perfected exhaust design saves operating costs through reduced power consumption of fans and pumps. Booths stay clean longer; are easier to service, reducing maintenance time and expense.

For complete information about DeVilbiss spray booths – standard, or special types – write us direct for our new Spray Booth Catalog, I-7000.

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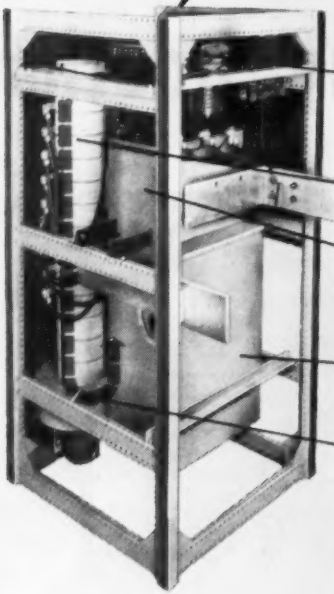

Automatic voltage control contains no moving parts or electronic tubes.

This tube contains time-proven General Electric germanium cells, each hermetically sealed in stainless-steel-ceramic enclosure for maximum corrosion resistance.

Transformer

Reactor provides instant, stepless control plus built-in short-circuit protection.

Powerful blowers supply high-velocity cooling air blast (red line) past cells, through reactor and transformer.

General Electric announces a

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Gentlemen:

Please send me bulletin GED-2934, "General Electric Automatic Germanium Plating Rectifier."

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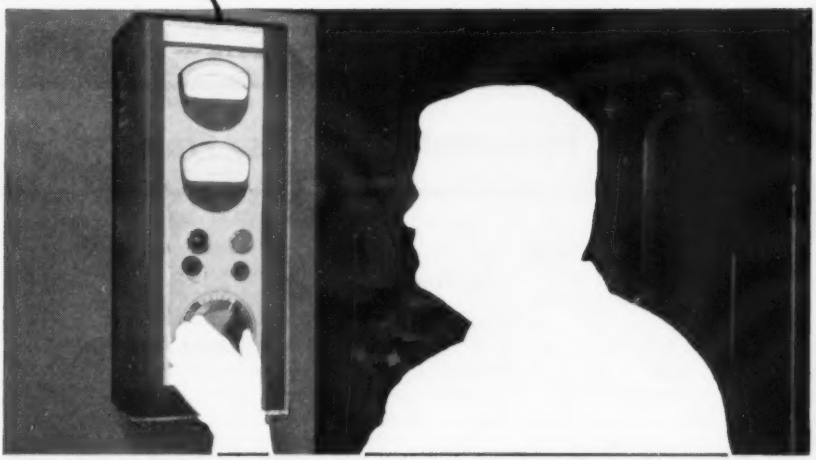

RELEASE THIS MAN FOR MORE PRODUCTIVE WORK . . . no further need for him to continually correct output in order to get high-quality work. Just set it and forget it. This unit corrects faster, more accurately than the most skilled operator. You get uniform power for most profitable plating.

NEW line of low-priced automatic germanium plating rectifiers

Examples: 9-volt/1500-amp, $1890; 12-volt/1000-amp, $1750

COMPLETE with remote, automatic voltage control

Here's the biggest advance in plating rectifier technology since the introduction of germanium: *automatic control at low prices*!

With automatic control, you simply set the output you want on the remote-control panel. This output is maintained automatically, regardless of changes in tank load or variations in a-c input voltage. The result is a uniform product from rack to rack—not too much deposition, which wastes valuable anode material, time, and labor; not too little deposition, resulting in costly rework.

Ratings *are now being built* from 6-volt/750-amp to 250-volt/140,000-amp, air-cooled and water-cooled. Ask your General Electric plating equipment supplier for more information, or send in the coupon at left for bulletin GED-2934. General Electric Company, Schenectady 5, New York.

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New Equipment, Materials, Processes

Cleaning

Polishing

Plating

Paint Finishing

Fume Ducts and Hoods

The Ceilcote Company, Inc., has announced the development of Duracor corrosion-resistant plastic fume ducts and hoods. Fabricated from a thermosetting plastic combined with glass or synthetic fibres, these ducts and hoods are available in any required shape.

The combination of chemical resistance, light weight, strength, workability and flexibility makes Duracor well suited for construction of plating, pickling and chemical fume ducts. In addition, hoods and ducts designed and fabricated by Ceilcote from this material resist acids, including hydrofluoric. They are also resistant to alkalies and solvents.

Complete information is available from Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

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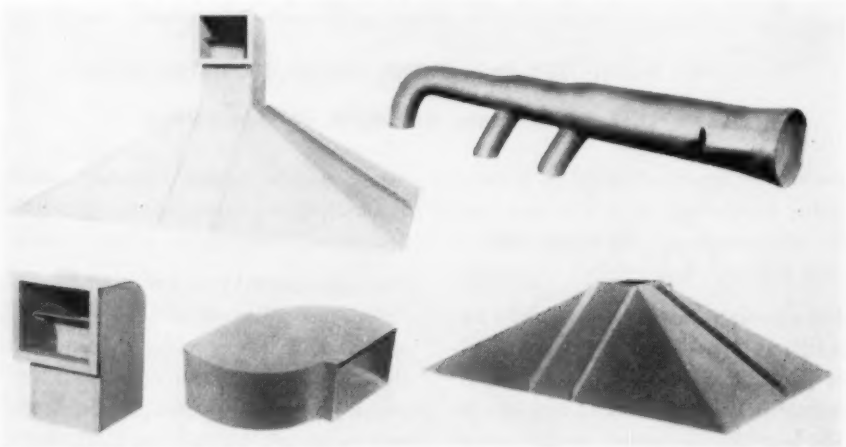


Ceilcote's Duracor Plastic Fume Hoods, Ducts: chemical resistance, strength, light weight

Automatic Plating Machine

Frederic B. Stevens, Inc., 1814 Eighteenth St., Detroit 16, Mich., has introduced "Little Steve," a small automatic plating machine.

"Little Steve" is designed for plating small and medium-sized parts. It also serves as a small automatic plating machine with a large capacity for finishing larger parts not required in large volume.

The "Little Steve" has proven to be suitable for plating electrical parts, door hardware, plumbing fixtures, pistons and small appliances. The machine measures seven feet in width and about ten feet in length. It can be used for anodizing or other electrochemical immersion processes, as well as for plating.

Because of the machine's low overall height, no overhead construction is necessary.

There are three possible handling methods for processing smaller parts in this machine: 1) the carrier arm acts as a holder for small individual racks; 2) the carrier arm acts as a rack and small parts are attached directly to it; 3) the carrier arm acts as a rack and the arms are racked on and off the machine's carrier arm bracket.

For more data circle **6** on Reader Service Card

★ ★ ★

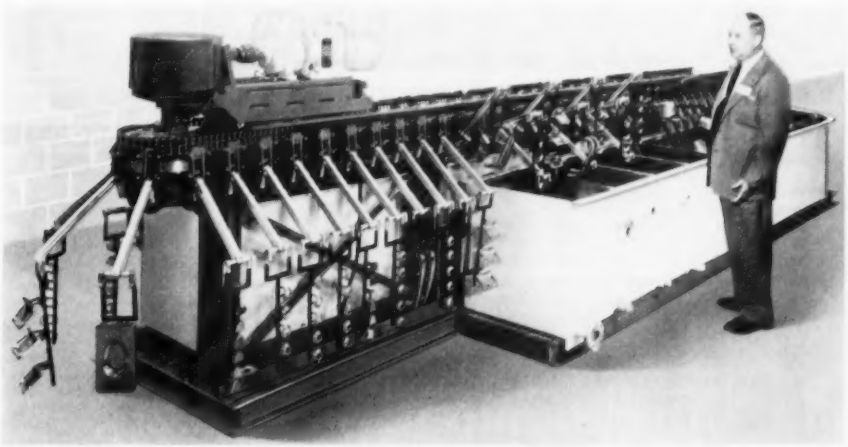
Safety-First Blast Grit

A silicon-free blast grit recently introduced by H. B. Reed & Co., Inc., is suitable for blast cleaning of vats, castings, ferrous and non-ferrous metals, tanks, stainless steel, and many other products.

Abrasive blasting can be a dangerous health hazard because of the dust created. "Black Beauty," as the product is called, helps to reduce this hazard by creating less dust and by eliminating the danger of silicosis (the material is silcon-free).

Other advantages of Black Beauty cited by the manufacturer: "cuts" rapidly; flows freely in any weather; will not rust or pack; is reusable; leaves surfaces cleaner, since it produces less dust; will not clog or foul machines; is completely inert.

Free samples are available from H. B. Reed & Co., Inc., 6618 Kennedy



Stevens' recently introduced "Little Steve" automatic plating and processing machine.

Reed's Black Beauty Blast Grit: six grades

Ave., Hammond, Ind. Type of work or degree of etch required shoud be specified, as Black Beauty is available in six degrees or grades for any degree of etch.

For more data circle **7** on Reader Service Card

Low-Temperature Zinc Phosphatizing Compound

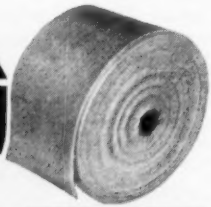
Oakite CrysCoat LT, a zinc phosphatizing compound for use at low temperatures in spray washing machines, has recently been developed by Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

This material is said to produce a fine-grained, dense, uniform coating which meets specifications MIL-C-490A, Grade I, and MIL-C-16232A, Type II, calling for coating weights between 150 and 300 milligrams per square foot on steel surfaces. Similar coatings are obtained on zinc.

Designed for use in five-stage washing machines, Oakite CrysCoat LT produces coatings at temperatures between 120 deg. F. and 140 deg. F. The coating is said to develop rapidly, particularly in deep cavities, thus minimizing the rusting difficulties. Solutions are easy to control, and no other

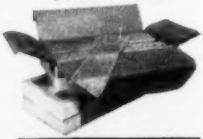
Bond® TACK CLOTH

PACKED IN ROLLS OR IN BULK JUST THE WAY YOU WANT IT!



IN ROLLS

Cut off any size piece as needed.



IN BULK

Size is 18" x 56"—folded to 4½" x 18" for ease of handling. Cut and folded—ready to use. Also Individually Packed in Glassine Envelopes —144 to the carton—

Stays Soft and Tacky — A SPECK-FREE FINISH EVERY TIME — Now available in white or gold — in Three Different Types of Cloth.

There's a big difference in TACK-CLOTHS—that's why BOND processes three different meshes of cloth with several types of formulations to give you the cloth that best "fits" your special needs. You can get BOND TACK CLOTH packed just the way that suits you best, too—in 150 yard Rolls of 36" wide cloth or in handy Cartons.

No matter which way you buy it, you can be sure that every square inch will stay SOFT and TACKY until the very last bit is used up.

All BOND TACK CLOTH is Spontaneous Combustion Proof, Lint-Free and Wax-Free. Gives a sparkling speck-free finish every time. Clean and Sanitary. No waste.

TRY THEM AND COMPARE RESULTS. Samples gladly sent upon request.

A WARRANTY OF SATISFACTION IN EVERY CARTON

Bond® CHEMICAL PRODUCTS CO. 2639 N. CLYBOURN AVE. CHICAGO 14, ILLINOIS

"The Tacky Wiper Specialist"

For more data circle **200** on Reader Service Card

ATLANTIC GREASELESS COMPOUNDS

Now PLASTIC TUBES

eliminates peeling of the container in application.
Revolutionary! — Try it!

Foil lined, fibreboard container

ATLANTIC GREASELESS COMPOUNDS offers a new plastic container, the most modern method of packaging for economy and ease of application. Standard aluminum package and foil lined fibreboard containers available if desired.

The rigidly controlled uniformity of ATLANTIC COMPOUNDS helps you maintain your high finishing standards. This dependable uniformity is assured by the highest grade ingredients and by extremely close quality control in manufacturing.
Devoted exclusively to producing unexcelled greaseless compounds. Atlantic maintains constant research striving for continually improved products. Technical assistance and data available upon request.

Plastic or Aluminum Tube

Certain franchise territories available — your inquiries are invited.

THE ATLANTIC COMPOUND CO.

1860 BALDWIN STREET WATERBURY, CONNECTICUT

For more data circle 201 on Reader Service Card

material need be added for upkeep, it is stated. Sludging difficulties are also reduced.

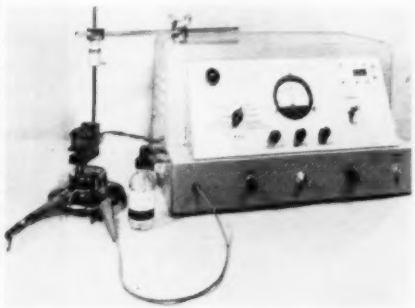
For more data circle 8 on Reader Service Card

★ ★ ★

Thickness Tester

The Kocour Electronic Thickness Tester "Model 955" determines the thickness of plated and other metallic coatings deposited over various metallic and non-metallic base materials. Operation is simple and virtually automatic. Readings are direct.

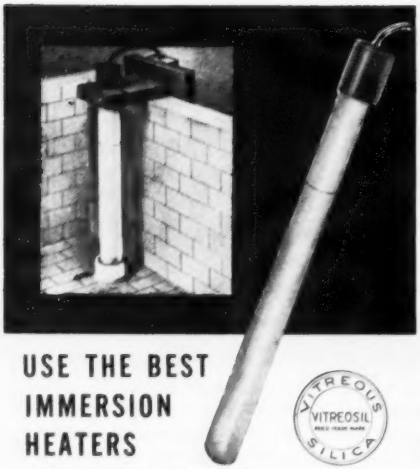
A multiple-position switch indicates the type of plating to be tested. The



Kocour Thickness Tester: constant pressure, improved accuracy, automatic operation

thickness of decorative and heavy chromium, silver, tin, cadmium, zinc, copper, brass, nickel, lead, lead-tin, and tin-zinc alloy can be determined on steel, copper, brass, aluminum and other metals, and on non-metallic materials, such as ceramics and plastics.

Calibration in conjunction with Kocour Thickness Standards ensures "long term accuracy," the manufacturer states. The accuracy of the instrument can be checked at any time. Adjustment will automatically correct high or low readings.



USE THE BEST IMMERSION HEATERS

VITREOUS SILICA — VITREOSIL

U.S. Patent No. 2,654,820

Compact, safe and efficient, VITREOSIL® electric immersion heaters offer you your most dependable units. Designed for acid pickling and electroplating solutions and other acid baths, VITREOSIL heaters give greater heat transfer per unit area and greater resistance to chemical attack.

VITREOSIL immersion heaters are made of pure fused silica and have special corrosion-resistant caps, built-in ground wires for additional protection and easily visible minimum immersion depth markings.

VITREOSIL immersion heaters will serve you best. Write for bulletin and prices.

THERMAL AMERICAN FUSED QUARTZ CO., INC.
18-20 Salem Street, Dover, New Jersey

Please send illustrated bulletin or information on _____

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Company _____

Name _____ Title _____

Street _____

City _____ Zone _____ State _____

For more data circle 202 on Reader Service Card

PLASTISOL PERFECT...

K & B OVENS!

Kirk & Blum Oven installation in the plant of a leading manufacturer of Plastisol coatings. Oven measures 12′ x 12′ x 12′ and is used for both experimental and production operations.

Kirk & Blum Ovens are popular throughout the Plastisol industry where uniform temperatures are required. The oven illustrated is operated at temperature ranges up to 600° F. with temperature variations throughout the oven of less than 5° F.

The oven is used to determine experimentally curing and baking temperatures, as well as for batch production of very large items.

Whatever your oven needs consult Kirk & Blum. Write for new "Ovens for Industry" catalog. The Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

KIRK & BLUM

OVENS FOR INDUSTRY

For more data circle 203 on Reader Service Card

A constant pressure device automatically maintains a uniform pressure between test cell and specimen. This eliminates reliance on the operator's judgment.

Literature on this thickness tester is available from the Kocour Co., 4814 S. St. Louis Ave., Chicago 32, Ill.

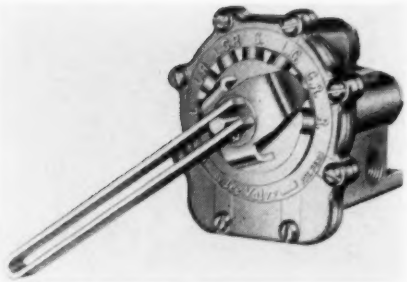
For more data circle **9** on Reader Service Card

★ ★ ★

Four-Way Selector Valve

Spraying Systems Co., 3229 Randolph St., Bellwood, Ill., has introduced a four-way selector valve for use in controlling liquid flow to multiple spray manifolds or feed lines.

Three outlet connections are provided and liquid flow through any one or any combination of these outlets is obtained by setting the control lever. Selection of setting is made with the valve in "off" position. Positions are indexed for automatic positioning of the control lever. The valve is opened by raising the lever handle. If use of less than three outlets is desired, adjustment is made by capping unused valve outlets. The unit is identified as the TeeValve and is supplied in choice of ¼-inch, ⅜-inch and ½-inch NPT outlet connections.



Spraying Systems' Four-Way Selector Valve

Because the TeeValve is built with

... CUT CLEANING COSTS WITH TECT'S

Model 22 Solvent Vapor Degreaser

For safety engineered cleaning TECT's compact Solvent Vapor Degreaser offers low initial installation cost and economical operation.

This versatile unit cleans approximately 250 lbs. of metal per hour in pure solvent vapor.

VITAL STATISTICS

Outside Diameter:	32.5 in.
Height:	37.5 in.
Outside Diameter of Tank:	23.5 in.
Work Clearance:	21 in.
Basket Diameter:	18 in.
Solvent Capacity:	13 in.

Larger sizes available

SAFETY

Minneapolis-Honeywell Safety Thermostat shuts off electricity if solvent vapors rise above the condenser, due to failure of water supply or inadequate volume of water.

Chromalox Thermostat for heating elements shuts off electricity when machine requires draining of sludge or if more solvent is needed.

Only $259.00

f. o. b. Dumont, N. J.

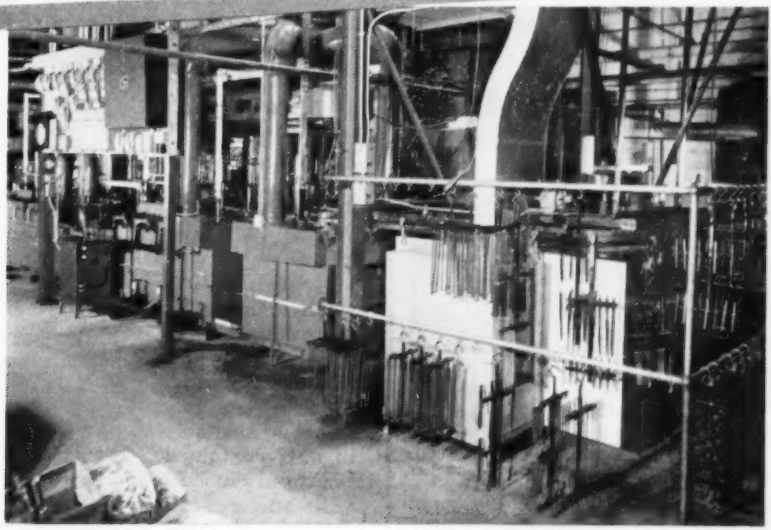
(Subject to change without notice)

ANOTHER PRODUCT OF TECT, INC. DUMONT, N. J.

AMERICA'S MOST COMPLETE LINE OF SAFETY SOLVENTS

For more data circle **204** on Reader Service Card

A BRIGHT FUTURE IN MUSIC STANDS WITH UDYLITE HI-C BRIGHT NICKEL



Krauth and Benninghofen, of Hamilton, Ohio, has been making music stands for almost a hundred years. Now a third generation continues the operations making about 99 percent of all the music stands sold in the United States.

Last year Udylite Bright Nickel 514H, the high chloride, high speed process, with a bright chrome overlay replaced the single step gray nickel which had long been the standard music stand finish.

The sales appeal of the bright nickel bright chrome finish forced higher production to meet the 20 per cent sales increase.

The operation of a Udylite high production Full Automatic Plating Machine enables these people to apply the new double process finish with precision and to get this better appearance and better corrosion resistance *at lower unit cost.*

Update *your* finish, *your* production and *your* costs with all of the advantages of Udylite Processes and Equipment.

THE Udylite CORPORATION
DETROIT 11, MICHIGAN

WORLD'S LARGEST PLATING SUPPLIER

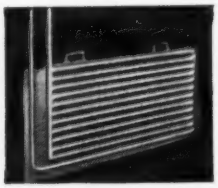
For more data circle **205** on Reader Service Card

GOOD BYE to PIPE COILS

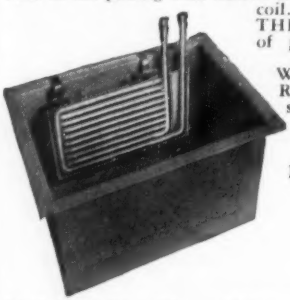
Old-style pipe coils are obsolete. They are too costly. Ask for Bulletin 355 and learn all about the modern

DEAN® THERMO-PANEL COIL

If you are now using old-style coils on important work you will discard them and you will install Dean Thermo-Panel Coil. It usually pays well to make the switch. Finishing, plating, cleaning executives, etc., who have made a careful comparison, are now specifying DEAN.



For example, a Dean Thermo-Panel Coil of the type shown above is used in the plating tank below. It is NOT a coil. It TAKES THE PLACE of pipe coils. Costs less. Weighs less. Requires less space. More efficient. More economical. Much better in every way.



Which Do You Want?

Check the squares below. Clip out. Mail to us with your name, firm name, and address. If you have a steam heating or cooling coil problem our bulletins will tell you how to solve it. If desired our specialists will help you.

☐ Bulletin 355—52 pages of Technical Data.
☐ Bulletin 257—Design & Price Information.

Backed by 20 Years of Panel Coil Manufacturing.

DEAN THERMO-PANEL COIL DIVISION
DEAN PRODUCTS, INC. 622 Franklin Ave.
BROOKLYN 38, N. Y. Tel. STerling 9-5400

For more data circle **206** on Reader Service Card

an outlet for a by-pass, it is suitable for all pump systems, including those employing a positive displacement pump. Where liquids contain suspended solids, the TeeValve with by-pass prevents settling out of solids.

The valve is made of aluminum and stainless steel for use with a wide variety of liquid chemicals.

For more data circle **10** on Reader Service Card

★ ★ ★

Germanium Rectifier

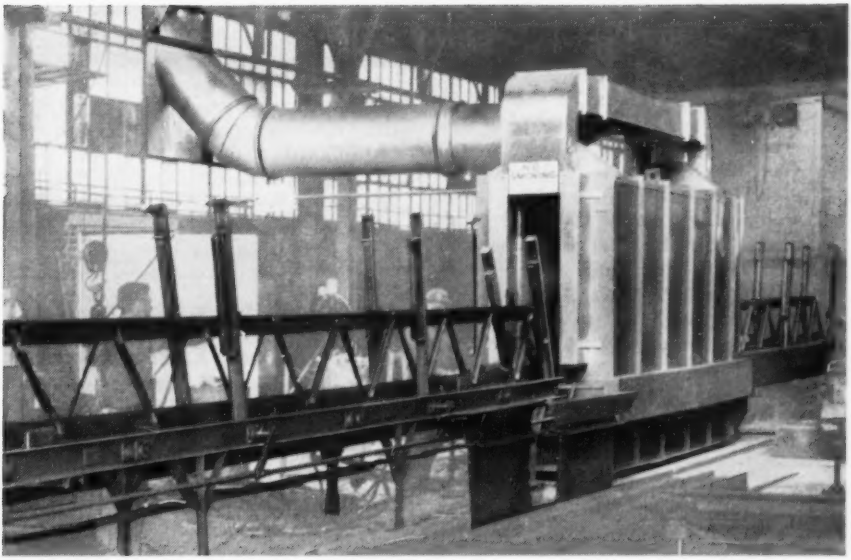
A redesigned germanium rectifier has been announced by Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

Designed for small or big shop use in electroplating, anodizing and related processing, the Powertron rectifier is available in self-contained packaged models with ampere ratings of 750, 1,500 and 3,000 amperes. Voltage range is two to 12 volts.

H-VW-M Redesigned Germanium Rectifier

Significant features include a d.c. protection system that requires no fuses. For these ratings, an arrangement of one germanium diode per phase is possible and there is no paralleling of junctions. This results in excellent balancing of diodes, H-VW-M states.

While the conservative rating of diodes enables the unit to withstand momentary external short circuits, the



FINISHED BY Flow Coating

Structural steel joists fabricated by the International Steel Company are prime coated on a small compact flow coating system engineered, built and installed by Koch. Most products, big or small, can be finished better by flow coating than by any other method. Profit by the expert advice and experience of our engineers. Call us for a free appraisal of your finishing problems.

Write for the Koch Flow Coating Story.

DESIGNING | ENGINEERING
BUILDING | INSTALLING

- Dust and Fume Removal Systems
- Exhaust Systems
- Ventilating Systems
- Air Conditioning
- Finishing Systems

GKS

GEORGE
KOCH
SONS, INC.
EVANSVILLE 4, INDIANA
CHICAGO DETROIT

For more data circle **207** on Reader Service Card

no-fuse d.c. protection system provides positive protection against major external short circuits, continuous overload and internal failure, it is stated. In addition, the system is not affected by heat from within or without, and voltage transients are lowered.

Finer positioning and smaller steps of voltage control are provided with the Powertron's 44-position switch.

No aging, efficiencies up to 90 per cent, and good voltage regulation, which are characteristic of germanium systems, are additional advantages. The H-VW-M unit gives less than 5 per cent direct current ripple, according to the company.

For more data circle 11 on Reader Service Card

★ ★ ★

Wood-Graining Machine

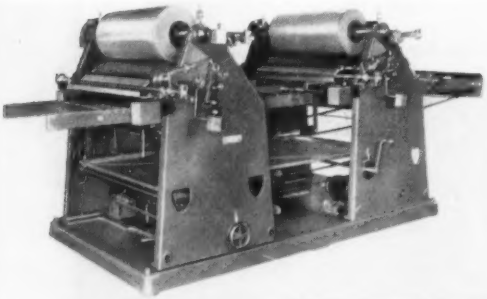
A double wood-graining unit that makes possible continuous graining and register work in two colors, eliminating the need for a second run, has been announced by Hamant Tool Co., Incorporated.

Designated the DH-128, the machine will grain sheets up to 48 inches wide at speeds of 25 to 75 f.p.m.

Further versatility has been added by making it possible to operate either one or both units with a registering device, giving perfect registration when both rolls are in operation. Besides speeding two-color work, the DH-128 also adds depth to the grain, the manufacturer states.

Complete information on the DH-128 may be obtained by writing Hamant Tool Co., Inc., 3917 E. Second St., Dayton 3, Ohio.

For more data circle 12 on Reader Service Card



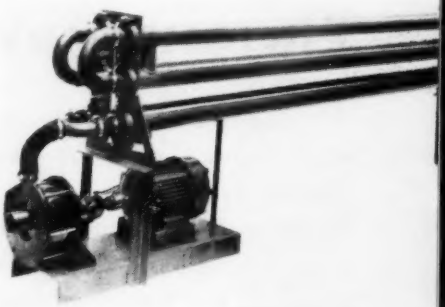
Wood Graining Machine: two colors, one pass

★ ★ ★

Larger Heat Exchangers

To heat and cool large plating, anodizing and pickling tanks, Carl Buck & Associates has announced a line of larger, jacketed exchangers equipped with pumps of the proper capacity to perform large heating and cooling jobs.

Exchangers utilize Karbate, steel, stainless, titanium or tantalum, depending on the corrosion characteristics of the various solutions. Pumps are made of Furacam acid-proof plastic, cast steel or stainless to match the corrosion resistance of the exchangers.



Camac Heat Exchanger: for big plating tanks

These exchangers are available in capacities up to 3,200,000 B.t.u./hr. in one unit and can be provided with built-in temperature controls for either heating or cooling. A descriptive catalog is available from the manufactur-

For more data on advertisement on opposite page, circle 208 on Reader Service Card →

EPON® RESIN does it!

Tough primer on RCA WHIRLPOOL Washers

withstands rugged washday punishment

RCA WHIRLPOOL Washer cabinets on storage conveyors. Finish system includes an Epon resin undercoat, formulated by Grand Rapids Varnish Corporation.

Epon resin-based finish plus careful inspection eliminate customer complaints.

HERE'S HOW...

OAPS AND MODERN high-strength tergents are persistent enemies of dinary paint. Because of severe rrosive conditions in some geoaphical areas, home laundry apances often show rust stains in t a few weeks of service.

Whirlpool-Seeger Corporation, Joseph, Michigan, has found at a primer based on Epon resin es an outstandingly superior otective finish to its washers, ers, and other home laundry uipment. To maintain the high- standards for coatings, Whirlol-Seeger set up a system of ntinuous quality-control testing their finishing section.

Epon resin-based primers, now standard on RCA WHIRLPOOL Washers, are credited with all but eliminating a major source of field complaints about coating failures.

• • •

If you have a product finishing or paint maintenance problem, you, too, may find that Epon resin-based coatings will do the job better. They have excellent adhesion, high resistance to impact and abrasion, outstanding resistance to moisture, heat, and corrosives. Ask your supplier for Epon resin-based paints and enamels. Write for the full Epon resin coatings story: "*Planning to Paint a Pyramid?*"

Epon resins are the epoxy polymers made exclusively by Shell Chemical Corp.

SHELL

SHELL CHEMICAL CORPORATION

CHEMICAL SALES DIVISION

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IN CANADA
Chemical Division, Shell Oil Company of Canada, Limited
Toronto • Montreal • Vancouver

er, Carl Buck & Associates, Essex Fells, N. J.

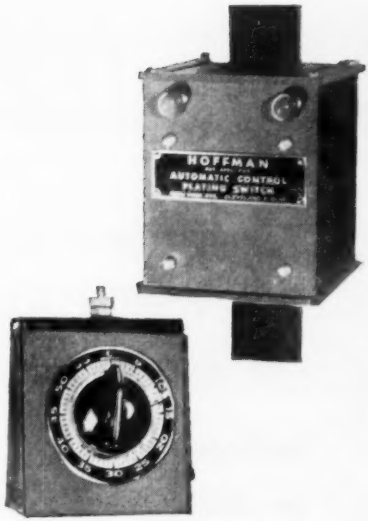
For more data circle **13** on Reader Service Card

★ ★ ★

Automatic Plating Cycle Control

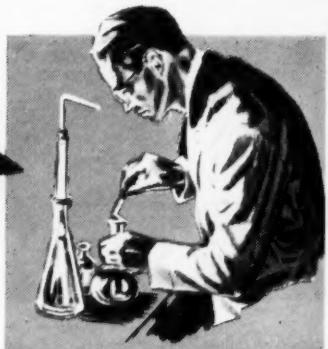
Separate, automatic plating-cycle control in production barrel plating plants is achieved with a control unit announced by the Hoffman Control Co., 6804 Park Ave., Cleveland, Ohio.

A control box having two signal lights and an automatic cut-off time switch make up the system. Installation is made by removing the cathode bar from each tank and replacing it with the Hoffman control box. The cut-off time switch may be mounted on the front of each tank or near it, as desired.



Hoffman Automatic Plating Cycle Control

Rhodium
ELECTROPLATING SOLUTIONS



Technological knowledge acquired through many years of experience, plus special processes and equipment, assure the high quality of our Rhodium Plating Solutions.

Recommended for contact surfaces of switches, waveguide parts and other electrical applications; can be applied in extremely heavy deposits, where required, up to 100 milligrams per square inch.

Rhodium plating provides the advantages of whiteness, lustre and corrosion resistance of a precious metal.

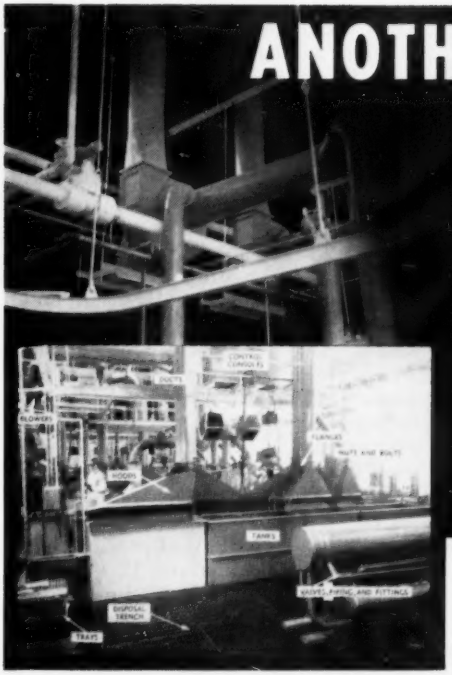
Consult our staff, without obligation, about your specific plating problems.

SINCE 1901

SIGMUND COHN MFG. CO., INC.
121 SOUTH COLUMBUS AVENUE, MOUNT VERNON, N. Y.

For more data circle **209** on Reader Service Card

ANOTHER P. V. C.* SUCCESS STORY BY ipf



Scintilla Division
of Bendix Aviation Reports
Maintenance-Free P.V.C. Service

**Rigid Polyvinyl Chloride (P.V.C.) Fabrication by Industrial Plastic Fabricators — the new material of construction — is being used for 90% of the equipment at Scintilla Division's new Plating Rooms.*

Plating tanks . . . stands . . . exhaust systems . . . baskets and trays . . . and drainage troughs were a frequent source of interrupted production when corroded metal equipment needed replacement. Even costly rubber lining of the metal to protect against the acids and corroding fumes did not solve the problem. But — since Scintilla Division's conversion to P.V.C. — no replacements, no slowdowns, no lost time.

These facilities, generally recognized as the most modern in the country, have used IPF Products without a single replacement.

IPF blowers, hoods, tanks, ducts, piping systems, valves, nuts and bolts, and machine parts can also solve your corrosion problems. P.V.C. is a lightweight, smooth surfaced, nonporous, plastic material. Its inherent anti-corrosive qualities insure long life — reduced maintenance costs.

For further information write for bulletin 102.

MANUFACTURED BY
industrial plastic fabricators, inc.
NORWOOD, MASS. NOrwood 7-3411

For more data circle 210 on Reader Service Card

The operator starts the current flow and the plating cycle by pre-setting the time on the switch dial. During the plating cycle the green light on the control box is on. It goes off upon completion of the cycle and the red signal light goes on. The red light signals the end of the plating cycle and shows that the plating current has been cut off.

Hoffman controls permit the safe removal of each tank barrel without danger of arc-started hydrogen gas explosions. Since the current can be turned off at will, on each tank, burning and unnecessary corrosion of barrel contacting points and the splashing of electrolytic solutions is reduced.

The Hoffman control is available in standard models having a capacity of 600 amperes and 5 to 15 volts.

For more data circle **14** on Reader Service Card

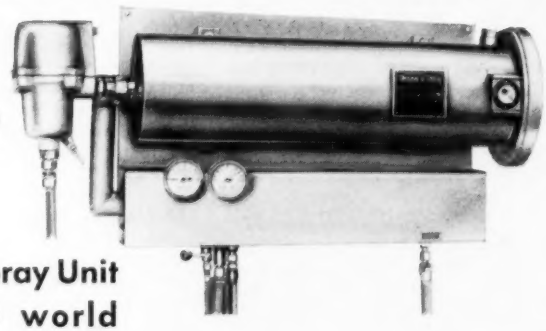
Dip Coatings for Zinc

Metal & Thermit Corporation, Rahway, N. J., has introduced four Unichrome dip compounds to be used as finish coatings in zinc and cadmium plating. All four are suitable for hand-operated still tanks, barrels, and fully automatic machines.

On zinc-plated parts, Unichrome Dry Dip Compound 1085 produces a bright, clear coating. It is recommended for products plated in bulk, such as conduit, electrical outlet boxes, and steel strip, and for products subject to outdoor exposure. Used in low concentration, 1085 is formulated to improve appearance and shelf life of plating. Where a brightener is also used in the zinc plating, 1085 reduces amount of brightener required, it is stated. A five to 20-second dip in a 1085 solution facilitates rinsing of plated work. Unichrome Dip 1085 is a leachless, chromate-type dip that has long tank life, the manufacturer states.

THERM -O- SPRAY
Trade Mark Reg. U.S. Pat. Off.

HOT SPRAY UNITS



—the leading Hot Spray Unit used all over the world

Reduce production costs—obtain better finishes!

THERMOSPRAY COMPANY, INC.
103 Park Avenue, New York 17, N. Y.
In Canada: Scandia Supply Co., Ltd., 376 Craig Street W., Montreal

For more data circle **211** on Reader Service Card

the best in the business...

RUTLEY

BURNISHING · TUMBLING and CLEANING COMPOUNDS

Rutley compounds are expressly developed to meet the specialized needs of the metal finishing industry. *Specialized know-how* is the intangible ingredient that makes *Rutley* compounds outstanding for quality and performance. They meet the highest standards for metal cleaning, burnishing and tumbling. This specialized know-how is just *one* of the many reasons why Rutley compounds do their work faster and better at less cost.

If you have a special problem why not let a Rutley technician help you solve it. For further information write for Rutley *Bulletin P-2.*

BURNAMITE
Finest Quality
BALL BURNISHING and TUMBLING FORMULA
producing superior color, lustre and finish on Zinc Die Castings

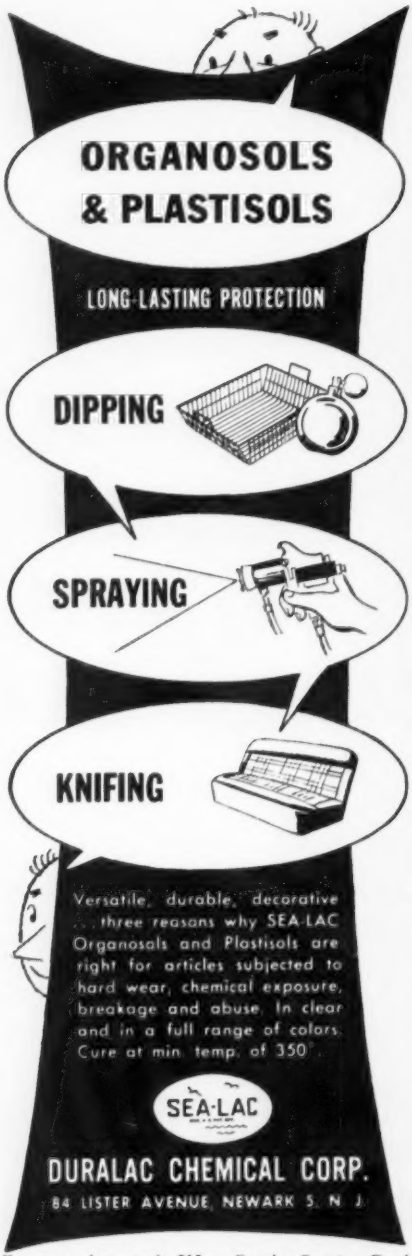
GLOW
New Liquid
BURNISHING COMPOUND
assures highest quality finish on Aluminum, Zinc, Brass and Steel.

DC-102
REVERSE ELECTRO CLEANER
Specially prepared formula for Zinc Die Castings, Brass, Steel and White Metal.

RUTLEY *Industries, inc.*
415 Greenwich St., New York 13, N. Y. • WOrth 2-1279

One of a series of "Rutley–Toons." 8½x11 reproduction FREE on request.

For more data circle **212** on Reader Service Card


ORGANOSOLS
& PLASTISOLS
LONG-LASTING PROTECTION
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Versatile, durable, decorative . . . three reasons why SEA-LAC Organosols and Plastisols are right for articles subjected to hard wear, chemical exposure, breakage and abuse. In clear and in a full range of colors. Cure at min. temp. of 350°.
SEA-LAC
DURALAC CHEMICAL CORP.
84 LISTER AVENUE, NEWARK 5, N. J.
For more data circle **213** on Reader Service Card

Having the same properties as the dry 1085 dip compound, but furnished as a liquid concentrate, Unichrome Dip Compound 1090 is used in solutions of 50 volumes to one.

Especially adapted to finishing cadmium plated parts but also employed with zinc plating, Unichrome Dry Dip Compound 1084 is recommended to provide an economical corrosion-resistant finish. Used in low concentration, it is particularly suitable for finishing thin-plated bulk work in either hand-operated or automatic lines. Tests show that Compound 1084 provides a lustrous finish, leachability and stability and that the finish will withstand a standard salt spray test for approximately 40 hours, the manufacturer states.

Unichrome Dip Compound 99 is a liquid version of 1084.

For more data circle **15** on Reader Service Card

★ ★ ★

Centerless Buff

The Centerless Open Bias Sisal Buff recently introduced by American Buff Co., 2414 S. LaSalle St., Chicago 16, Ill., is said to combine the qualities of Bias Sisal and Bias Cloth with Centerless Construction. The result of this combination, the manufacturer states, is improved flexibility and wear, and cooler running.

These buffs are made of bias-cut sisal fibres, locked together by American Buff's "Permanizing" process, which helps eliminate frayed ends and scratching. Centerless "Lok-Tite" steel rings hold buff units securely in place. The design of the steel clinch ring permits locking together a large number of buff sections. The user can build up a buffing face width of 12 inches or more with complete safety, it is stated.

Do heating coils in your vapor degreaser often get gummed up like this? You may be using a degreasing solvent that's poorly stabilized. Read below how you can minimize this coil-cleaning job, and degrease more parts between cleanouts.

Why Nialk® TRICHLORethylene with **psp** gives you more degreasing, less downtime

It's the *stabilizer* in the trichlorethylene that determines how long you can use it safely and efficiently.

Light, heat, air, acids, and active metals such as aluminum, given time, can break down improperly stabilized trichlorethylene, making it unfit for further degreasing.

Nialk stabilizer has psp—permanent STAYING power. You never have to replenish the stabilizer in NIALK TRICHLORethylene. It's neutral, non-alkaline, works equally well with all metals.

psp means cheaper degreasing. Even after repeated distillations, this unique NIALK stabilizer actively retards the formation of degradation products in your bath.

You don't have to clean the bath nearly so often. You can degrease many more parts between cleanouts.

Get proof of Nialk's cheaper, safer cleaning. Write on your business letterhead for a revealing resumé of comparative metallurgical tests made on NIALK TRICHLORethylene and four other leading brands.

HOOKER ELECTROCHEMICAL COMPANY

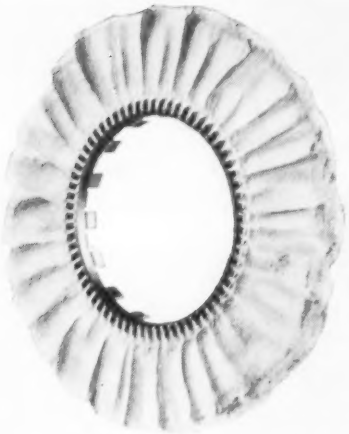
1402 Union Street, Niagara Falls, N. Y.

HOOKER CHEMICALS PLASTICS

NIAGARA FALLS • TACOMA • MONTAGUE, MICH. • NEW YORK • CHICAGO • LOS ANGELES

Manufacturers of VIRGO® DESCALING SALT, VIRGO ELECTROLYTIC SALT, VIRGO MOLTEN CLEANER

For more data circle **214** on Reader Service Card



American Buff's Centerless Bias Sisal Buff

The "Centerless" construction features a patented "Pre-Assembly" change-over, which reduces down-time by permitting the complete buffing head to be changed quickly. Individual sections are locked together to required width by means of the "Lok-Tite" rings, then mounted on a hollow telescoping steel shaft with adjustable flanges. Thus the entire unit, pre-assembled, can be slipped on or off the machine quickly.

American Buff's Centerless Open Bias Steel Buffs are available with cloth covering or in 100 per cent sisal.

For complete information, or free demonstration in your plant, write to American Buff Company, 2414 S. LaSalle St., Chicago 16, Ill.

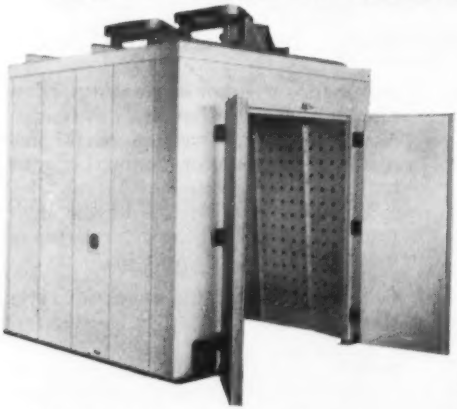
For more data circle **16** on Reader Service Card

★ ★ ★

Alkaline Deruster

Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn., has

You're SURE of UNIFORM Drying—FAST



Made in wide range of standard electric-, gas-, oil- or steam-heated, cabinet, rack or truck types and in special batch or conveyor types.

in

ROCKWELL

Recirculating

OVENS

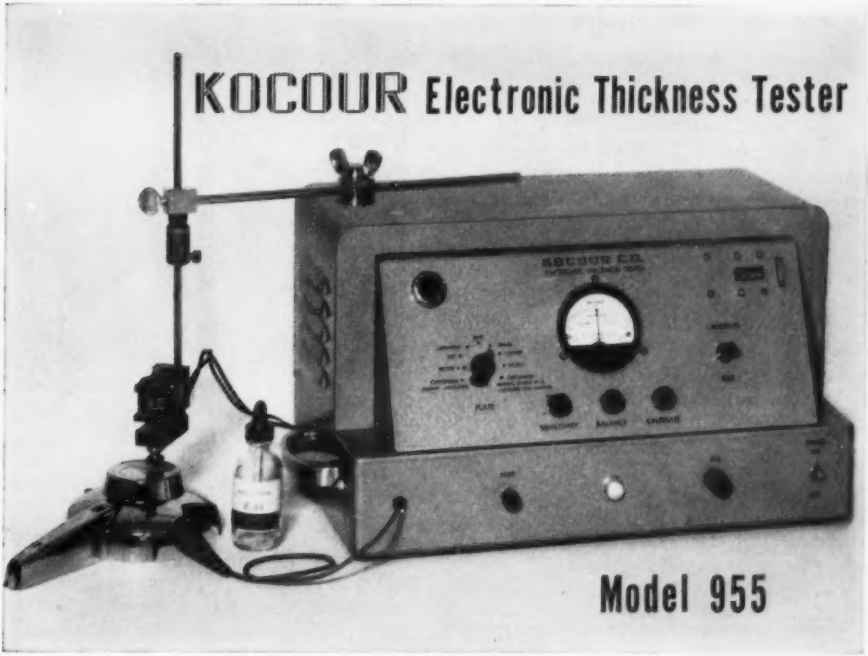
Uniform distribution of controlled, high velocity, recirculated, heated air assures faster drying or baking at precise temperature.

Investigate the oven with the built-in heating "know-how." Write for Catalog.

W. S. ROCKWELL COMPANY

2907 Eliot Street Fairfield, Connecticut

For more data circle **215** on Reader Service Card



A NEW MODEL

To solve your plating thickness problems!

The importance of thickness testing cannot be over-estimated. However, the accuracy of a thickness test can be no better than the accuracy of the method used. Can you rely with confidence on the method you are now using? To what degree does the "human element" influence the accuracy of the results?

The Kocour Electronic Thickness Tester Model 955 will give you readings with an accuracy of 90-95%. Furthermore, with the new Calibration feature used in conjunction with Kocour Thickness Standards, you cannot only check the accuracy, but calibrate the instrument to correct slightly high or low readings. A plating selector switch indicates all of the commonly plated metals which can be tested on various basis metals and materials . . . human error is virtually eliminated by the automatic operation . . . readings are direct . . . results are reproducible . . . average test requires about one minute.

These features add up to a dependable instrument which will solve your problems efficiently, accurately and quickly. Write for further details today!

Ask for a demonstration or 15-day Free Trial.

KOCOUR CO.

Pioneers in Control for the Plating Industry

4814 S. ST. LOUIS AVENUE • CHICAGO 32, ILLINOIS

For more data circle 216 on Reader Service Card

introduced an alkaline deruster for use as a non-electrolytic process to remove rust quickly.

Called Alkaline Deruster No. 2, the material is an alkaline salt mixture formulated to be mixed with water and used at 180 deg. F. to boiling.

Besides removing rust, this deruster will also remove many types of paint. It will not cause hydrogen embrittlement, will not attack the base metal, is non-toxic, and tends to prevent further rust after use, the manufacturer states. Literature is available from the Mitchell-Bradford Chemical Co., Wampus Lane, Milford, Conn.

For more data circle **17** on Reader Service Card

★ ★ ★

Immersion Heaters

The Glo-Quartz Electric Heater Company, Inc., Willoughby, Ohio, now has four basic types of immersion heaters.

Three Types of Glo-Quartz Immersion Heaters

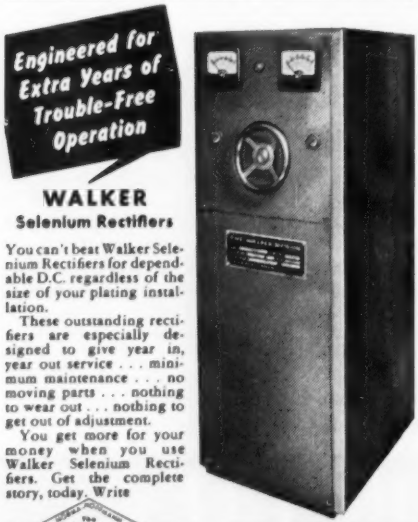
The "U" Type, with translucent fused-quartz unit, has been designed to heat plating and pickling solutions.

The resistance heating element is mounted within the "U" tube. The coil is firmly supported with special heat-conducting powder, and is hermetically sealed. A plastisol-coated heater guard provides protection for the tube, with minimum obstruction of heat.

The patented "GN" Type translucent, fused-quartz, straight-tube heater —like the "U" Type, is for acid-solution applications. It also has the plastisol-coated heater guard, vapor-proof junction box, and replaceable heating element. It is available in a wide range of sizes and wattages, and in lengths up to 9 feet. It can be used in solutions up to 200 deg. F.

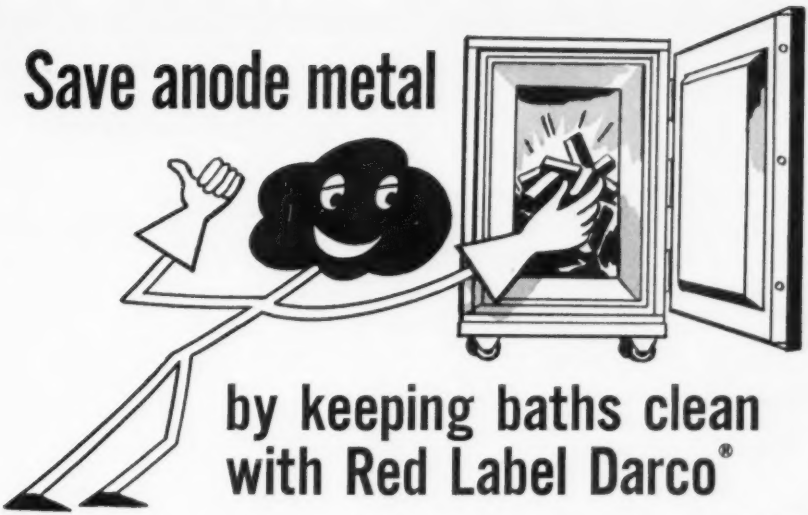
The "MB" or Multi-Blade Type is designed for use in alkaline, water, or oil solutions. The blades are metal-sheathed in copper for uncontaminated water solutions; in stainless steel, for contaminated water solutions, high-pH cyanide plating baths, reverse-cur-

To page 114→


Engineered for Extra Years of Trouble-Free Operation
WALKER
Selenium Rectifiers
You can't beat Walker Selenium Rectifiers for dependable D.C. regardless of the size of your plating installation.
These outstanding rectifiers are especially designed to give year in, year out service . . . minimum maintenance . . . no moving parts . . . nothing to wear out . . . nothing to get out of adjustment.
You get more for your money when you use Walker Selenium Rectifiers. Get the complete story, today. Write
Walker
THE WALKER DIVISION
NORMA-HOFFMANN BEARINGS CORPORATION
STAMFORD, CONNECTICUT

For more data circle **217** on Reader Service Card

Save anode metal



by keeping baths clean with Red Label Darco®

Plating rejects . . . and consequent loss of scarce, costly anode metal . . . can be practically ended when you use Red Label DARCO activated carbon to keep plating baths clean.

The carbon preferred by electroplaters everywhere, Red Label DARCO is the *only* carbon developed exclusively for removing impurities from plating solutions. It wets quickly . . . cuts dust problems. It purifies economically . . . a little DARCO does a lot. Its high density reduces time and labor for dumping filters by up to 50%.

The DARCO distributor near you is a good man to know. He carries DARCO in convenient 10 and 50 pound cartons . . . and he can show you how to use it most effectively. We'll be glad to send you the name of the DARCO distributor nearest you.

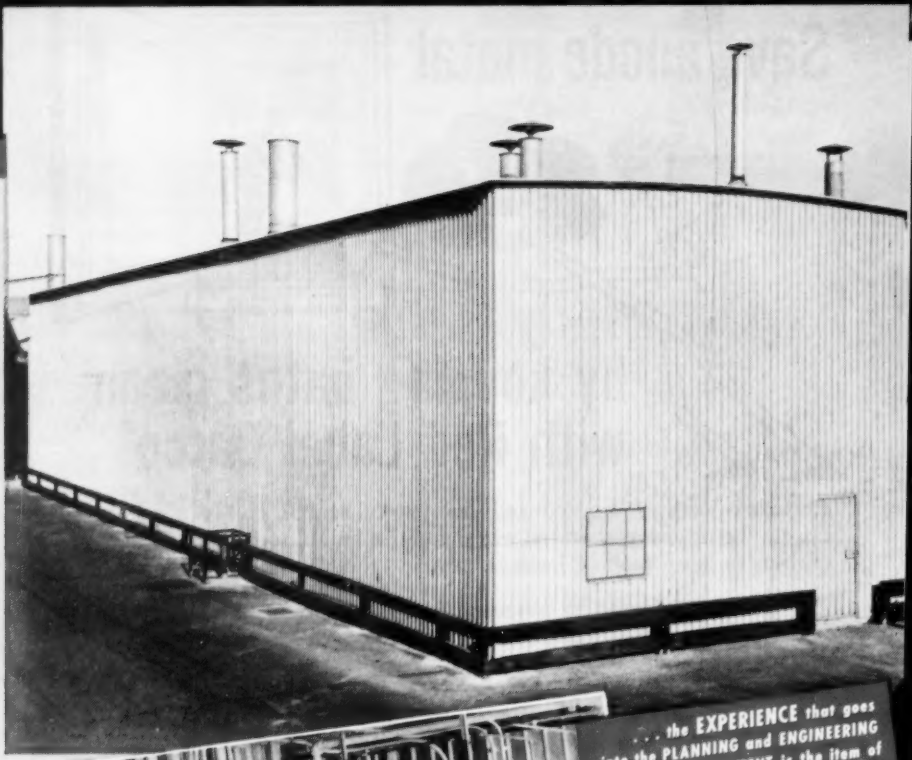
DARCO IS MADE BY

ATLAS CHEMICALS DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE

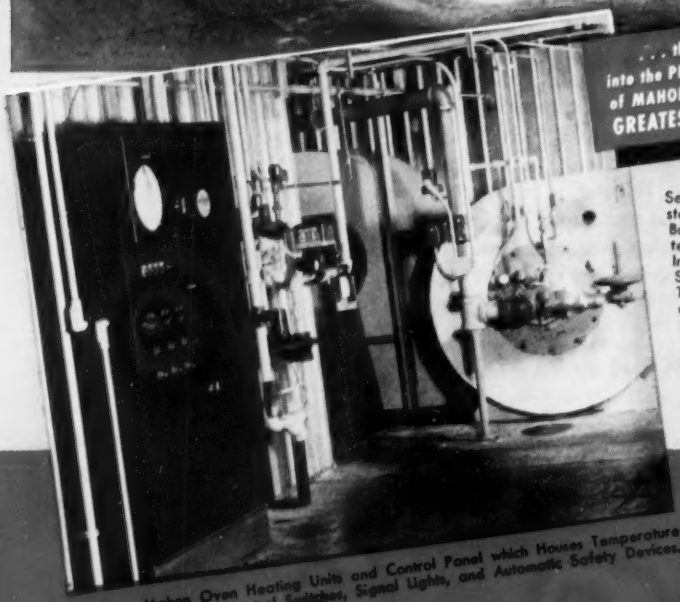
In Canada: Atlas Powder Company, Ltd.
Brantford, Ontario, Canada

For more data circle 218 on Reader Service Card

COMPLET



. . . the **EXPERIENCE** that goes into the **PLANNING** and **ENGINEERING** of **MAHON EQUIPMENT** is the item of **GREATEST VALUE to YOU!**



Mahon Oven Heating Units and Control Panel which Houses Temperature Recorders, Control Switches, Signal Lights, and Automatic Safety Devices.

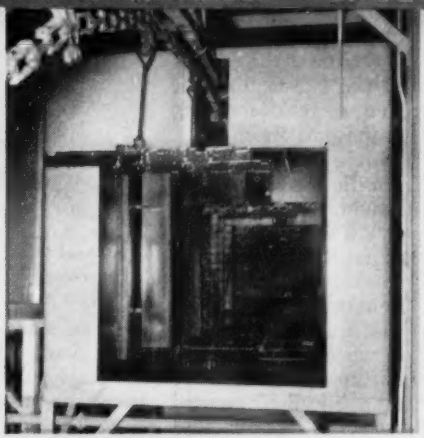
Above is a Complete Mahon Self-Housed Finishing System Installed Adjacent to Manufacturing Buildings at International Harvester Company's Plant, Fort Wayne, Indiana. This is a Flow Coating System Designed for Painting Truck Parts . . . the arrangement of Major Units of Processing Equipment is very compact and highly efficient; free from Engineering and Design Compromises sometimes imposed by restrictions encountered inside Manufacturing plants. Walls and Roof are Mahon Metal Wall Plates.

M

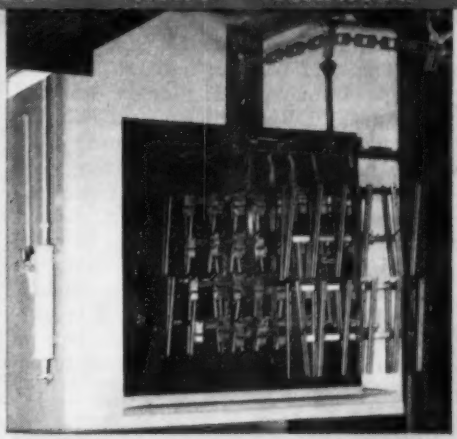
E

Finishing SYSTEMS

. . . for ENAMELS • LACQUER • PAINT • VARNISH



Entrance End of the Mahon Flow Coater. Paint is Held at Constant Temperature and Viscosity.



Parts Entering Metal Cleaning and Rust Proofing Machine in the Complete Mahon Self-Housed Finishing System at left.

Complete Mahon SELF-HOUSED Finishing System OUTSIDE of Manufacturing PLANT Solves Many SPACE PROBLEMS!

In industrial plants where adequate space is not available, or where floor space and headroom restrictions would seriously interfere with the planning and the engineering of an efficient and economical production finishing system, Mahon engineers recommend installation of a Self-Housed Finishing System on the roof of the plant, or outside the plant adjacent to manufacturing buildings . . . the installation illustrated above is an excellent example. In such installations, no restrictions are imposed by either floor space or headroom; consequently equipment can be planned and coordinated for maximum efficiency. In this particular finishing system, the equipment is installed on two levels . . . the Five-Stage Metal Cleaning and Rust Proofing Machine, the Flow Coater, the Ventilated Drip Enclosure, and the Control Panel with Recording Instruments, are located on the ground level. The Dry-Off Oven, Finish Baking Oven, Oven Heating Units, and Air Supply and Exhaust Equipment are located above on the second level. The roof and walls, which house the complete system, are an integral part of the Oven Construction. This is a highly satisfactory Mahon solution of one manufacturer's production painting problem. When you are confronted with a finishing problem, you, too, will want to discuss it with Mahon engineers . . . you'll find them better qualified to advise you on both methods and equipment requirements. See Sweet's Plant Engineering File, or write for Catalog A-657.

THE R. C. MAHON COMPANY, Detroit 34, Michigan • Branch Offices in New York and Chicago

Engineers and Manufacturers of Metal Cleaning and Pickling Equipment, Metal Cleaning and Rust Proofing Equipment, Spray Booths, Flow Coaters and Dip Coaters, Drying and Baking Ovens, and Complete Conveyorized Finishing Systems.

AHON

rent, alkaline electro-cleaners, and high-pH alkaline solutions; and in steel for low-pH alkaline or cyanide plating baths or oil solutions. There is maximum protection against burn-out, the manufacturer states, because each blade is individually wired with several parallel resistance elements.

The "IG" or Impervious Graphite-Type Immersion Heater is designed for use in hydrofluoric acid solution applications, copper fluoborate plating baths, and in acid solutions containing hydrofluoric and concentrated phosphoric-acid solutions. A heavy-walled tube encases a resistor element that is embedded in a compound that prevents stray currents and is conducive to efficient heat transfer, it is stated. A vapor-proof junction box is mounted permanently onto the tube.

For more data circle **18** on Reader Service Card

For cleaning metal, wood and plastic surfaces before painting. Order today through your supplier.

DETRO SALES CO., INC., *Culver City, Calif.*
Standard of the Finishing Industry Since 1934
For more data circle **220** on Reader Service Card

Sheet-Steel Separator

Basco Sheet-Steel Separator

A non-magnetic case protects the redesigned Basco Sheet-Steel Separator from the demagnetizing influence of metal and metal dust particles.

Other features of the Basco unit are a reinforced aluminum frame, with a moulded handle for ease in moving the units.

The Basco Sheet-Steel Separator is a permanent magnet unit that induces a magnetic field in stacked sheet steel when the unit is placed at the front or side of the stack. The magnetic field created causes the steel sheets to repel each other, with the top sheets fanning out with air space between them. As the top sheets are removed the sheets below automatically move up, with this action repeating to the bottom of the stack.

The use of Basco unit, where continuous sheet steel separation is desired, eliminates marring of sheet edges which results from using such implements as ice picks and screw drivers for separating polished sheets.

The separators are made in 23 models, 4 sizes, suitable for handling sheet steel from tin can stock up to ¼-inch plate, in stacks up to 32 inches high.

Literature available from E. V. Nielsen, Inc., 129 Broad St., Stamford, Conn.

For more data circle **19** on Reader Service Card

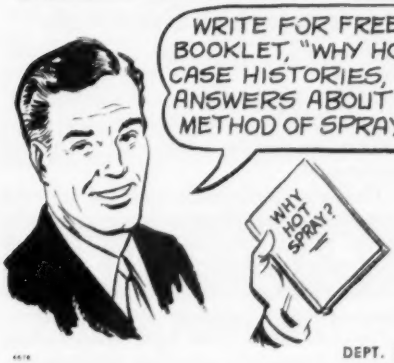
★ ★ ★

One-Coat Hammered-Effect Lacquer

A one-coat fast drying hammered-effect lacquer has been developed by

SPEE-FLO

HOT SPRAY MAGIC DOES IT AGAIN!


WRITE FOR FREE, FACT-PACKED BOOKLET, "WHY HOT SPRAY?"..... CASE HISTORIES, QUESTIONS AND ANSWERS ABOUT THIS PROVED METHOD OF SPRAY APPLICATION.
WHY HOT SPRAY?

Based on actual operating experience from Spee-Flo files.

SPEE-FLO

HOT SPRAY HEATERS

DEPT. PF-28 • 720 POLK AVE. • HOUSTON, TEXAS

For more data circle 221 on Reader Service Card

Maas & Waldstein Co., 2121 McCarter Highway, Newark 4, N. J. Called Dulac One-Coat Hammertone Lacquer Enamel, this paint is said to adhere well on most metals. It can be applied with a standard spray gun and it is available in a wide range of metallic colors.

For more data circle **20** on Reader Service Card

★ ★ ★

Parts Cleaner

Sprague Devices, Inc., Michigan City, Indiana, has recently introduced the Air-Push Spragit, an air-operated tool that aids in cleaning small parts. The unit is quickly adapted to the cover of any standard five- or ten-gallon metal container. It agitates a basket that fits inside the container. The Spragit may be used with any immersion cleaning fluid.

Air-Push Spragit: solvent cleans small parts

The device operates on as little as 12 pounds of air. It automatically shuts off when lifted from the can.

For more data circle **21** on Reader Service Card

★ ★ ★

Electroplating Chemicals

Wagner Brothers, Inc., 400 Midland, Detroit 3, Mich., has recently introduced a complete group of electroplating chemicals to supplement the company's established line of plating equipment.

The group includes the following materials: Iso-Brite Copper, White Brass, Cadmium, and Zinc; Iso-Lok Chromate Finishes; Wabrite Nickel; Krome-on, the chromic-acid mist-inhibiting aid to plating throwing power introduced a year ago; Benchmark Metal Cleaners, including soak clean-

TUMBLING CHIPS

PROCESSED LIMESTONE HONING CHIPS are excellent for producing a super fine finish on non-ferrous metals.

PROCESSED RED GRANITE ABRASIVE CHIPS are exceptionally well suited for developing a fast cut on ferrous metals.

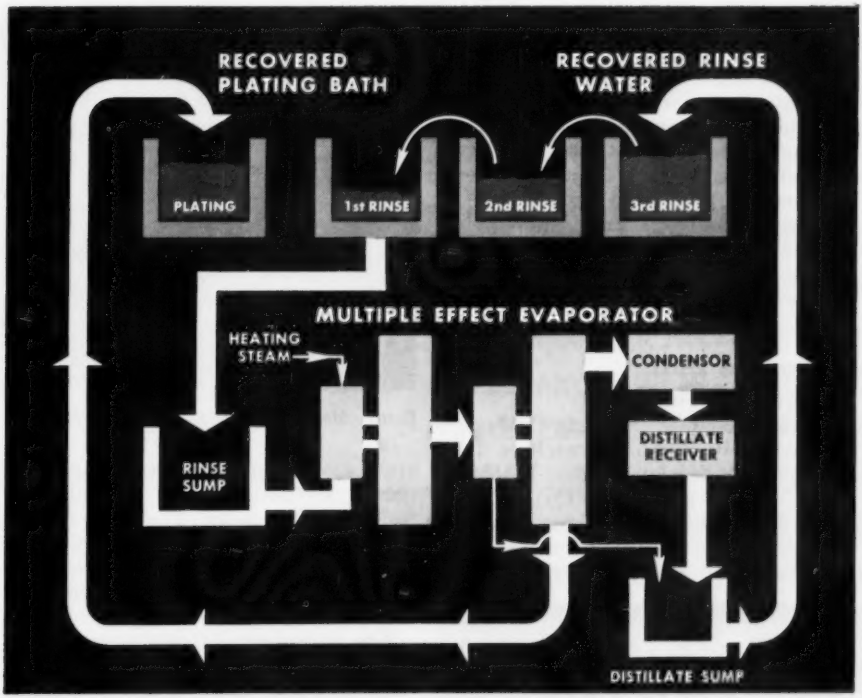
CHIPS IN 16 SIZES

FREE CATALOG AND CHIP SAMPLES FOR COMPARISON.

SAMPLE PARTS PROCESSED
Write or Call
VE 8-2071

UNIVERSAL TUMBLING SUPPLY CO.
14337 Mansfield **Detroit 27, Mich.**

For more data circle **222** on Reader Service Card



New recovery system cuts plating costs!

Industrial's Plating Bath Recovery Equipment provides complete recovery of acid and metal drag out losses, using a rapid evaporation process engineered to suit your operation. The savings can be fantastic . . . the system not only returns fresh plating solution to the bath and pure water to rinse tanks . . . it eliminates the high cost and trouble of neutralizing corrosive rinse water for disposal. In a typical case the replacement of solution and destruction of rinse water cost $12.46 per hour. **The Industrial System recovers the bath at a cost of $2.13 per hour.**

Unbelievable? . . . No sir! . . . these are systems designed by a company with a 30-year reputation for building the best in plating equipment. Let us prove it—our staff will be glad to make an analysis of your process, recommend equipment and estimate costs and savings.

Send for complete data

INDUSTRIAL

FILTER & PUMP MFG. CO.

5904 OGDEN AVE., CHICAGO 50, ILL.

Please send me reprints of articles and literature on Industrial's Plating Waste Recovery Systems.

NAME_____

TITLE_____

COMPANY_____

ADDRESS_____

CITY_____ STATE_____

For more data circle 223 on Reader Service Card

ers; electrolytic cleaners for zinc base die castings, brass and copper; an anodic high-detergency cleaner for removing smut from steel; and electrolytic and soak cleaners for copper, ferrous metals, aluminum and alloys.

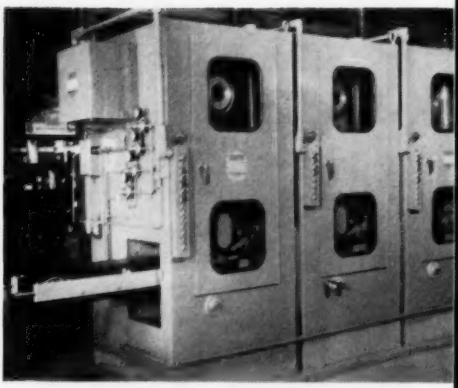
Product Bulletins are available by writing to Wagner Brothers, Inc., 400 Midland, Detroit, Michigan.

For more data circle **22** on Reader Service Card

★ ★ ★

Abrasive Belt Polishing Machine

Model R600C-3 "Straight-O-Matic" abrasive belt polishing machine has been introduced by Curtis Machine Div., The Carborundum Co., Jamestown, N. Y. It employs three abrasive belts over one conveyor belt and is equipped with wet grinding, oil mist applicator, automatic tracking and pneumatic tensioning of the 10-inch-wide abrasive belts. The unit makes possible a three-grit polishing sequence, a three-step stock removal for sizing, or combinations of polishing and grinding.



Curtis Model R600C-3 Polishing Machine

The manufacturer recommends this machine for everything from small electronic and business machine parts to automotive parts, saw blades and other applications. The neoprene rubber conveyor belt allows for relatively close tolerance work. Fixtures, when required, can be attached to the conveyor belt.

For more data circle **23** on Reader Service Card

★ ★ ★

Tank-Lining Method

Recently developed materials and methods for tank lining have been announced by the du Pont Company's Fabrics Division, Wilmington, Del.

Called "Fairprene" T-5594, this tank-lining sheet provides good overall chemical resistance. Ready-cured, it eliminates the necessity of curing in the field or for moving equipment from operational location. It is stable in storage and therefore requires no refrigeration. Its stretch approaches

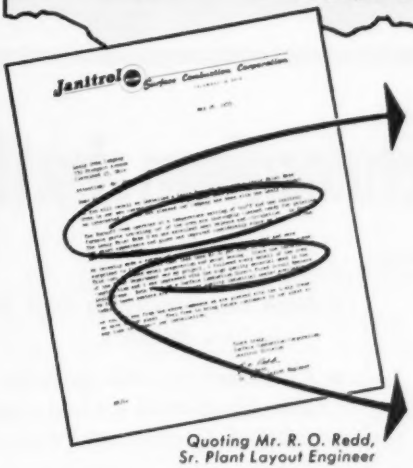
To page 122→

Park No. 290
BLACKENING SALT

Black Oxide finishing for rust resistance and decorative parts. Speedy black coating in water solution with no electric current. Permanent black finish on ordnance parts, tools, aircraft, bearing races. Dazzling black decorative finish for television cameras, business machines, hardware, metal screens and machine parts. Excellent bond for paints and enamels. Simple one bath operation. Write for bulletin H-16. Park Chemical Co., 8078 Military Ave., Detroit 4, Mich.

For more data circle **224** on Reader Service Card

Janitrol Division
Surface Combustion Corporation
COLUMBUS 16, OHIO



Quoting Mr. R. O. Redd, Sr. Plant Layout Engineer

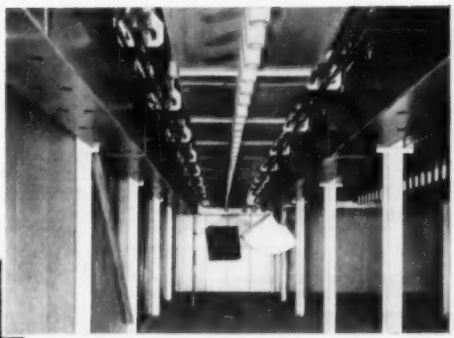
The LANLY Paint Bake Oven

HAS EXCELLENT HEAT BALANCE AND CIRCULATION. IN FACT OUR PAINT APPEARANCE AND GLOSS HAS IMPROVED CONSIDERABLY SINCE WE INSTALLED THE NEW LANLY BAKE OVEN

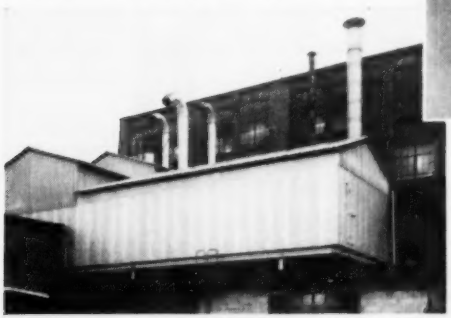
I was impressed with the high quality material used in the Lanly ovens.

Another of the nation's leading manufacturers attests to the efficiency and multi-fold merits of their LANLY OVENS.

Illustration below shows the ingenious manner in which LANLY engineers with the cooperation of The Surface Combustion organization, circumvented the problem of available factory floor space.



Showing a partial conveyor run in the LANLY low temperature paint bake oven.



YOU TOO CAN DO A BETTER JOB WITH LANLY OVENS

Write for the Lanly Catalog

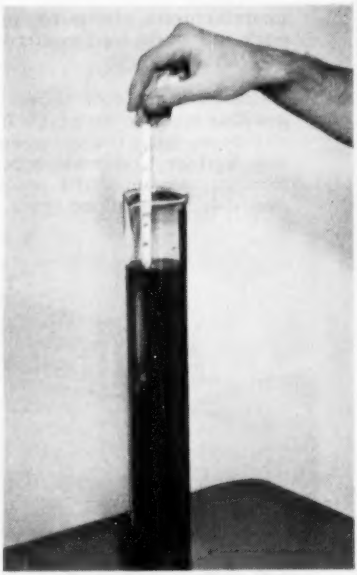
LANLY
FINISHING OVENS
THE LANLY COMPANY • 770 PROSPECT AVE
CLEVELAND, OHIO

For more data circle 225 on Reader Service Card

News about UNICHROME Trade Mark

"Automated" chromium bath

- ***Bath automatically kept in optimum balance***
- ***Chemical control greatly simplified with Unichrome SRHS® Chromium Process***



A simple hydrometer check, taken at periodic intervals, indicates when to add SRHS Compound.

Tantalum protects new electric immersion heater

A tantalum sheath encases the heating element in an electric immersion heater developed by Metal & Thermit. This is truly advanced design. It permits direct application of electric heat in all acid solutions except hydrofluoric and fuming sulfuric. It serves as a 5000-watt auxiliary heater . . . is rugged enough for long, continuous primary service.

Tantalum is an acid-proof, corrosion-proof metal comparable to steel in strength. It is available in Unichrome U-bend and "hairpin"-bend coils, also. These coils can be used for both heating and cooling, outlast ordinary coils many times over, cutting downtime and costs. Send for more information.

NEW CYLINDRICAL ANODE EXPOSES LARGER EFFECTIVE SURFACE

A new style of Unichrome round anode for chromium plating features a ribbed perimeter. The ribs give 75 current throwing edges or "points" in the 2" diameter anode, and 55 edges in the 1½" anode.

This multipoint ribbed anode prevents trivalent chromium build-up in solutions where cathode area is large. It offers all the advantages of the original smooth round Unichrome Anode. These include longer life, better current distribution, high conductivity, resistance to warping. Send for data sheet RRA-1.

helps cut plating costs

Remarkable feature of SRHS Solutions is the *self regulation* of important chemical constituents. In effect, this means *automated control.* Automatically kept in optimum balance, the bath assures good results, saves manhours and money.

OPERATION IS EASIER

Unlike plating with ordinary chromium, there's no need to make lengthy analyses of samples of the SRHS solution; no need to lose time determining additions to the bath to restore proper balance for good plating.

Instead, the unique formula of the SRHS compound permits a reserve of chemical to be available in the tank ready to dissolve automatically in the right amount needed to replace losses.

By maintaining themselves continuously in peak plating balance, the SRHS baths provide not only a more foolproof operation, but also better results.

HOW RESULTS ARE IMPROVED

Through this *automated* control of plating balance, the numerous cost-cutting benefits of SRHS are achieved to the fullest. Plants plate up to twice as fast as with ordinary chromium . . . save on power consumption . . . gain more production capacity without extra equipment . . . and reduce the "burning" and "missing" that account for so many rejects.

Send for Bulletin SRHS-3.

Unichrome is a trademark of Metal & Thermit Corp.

METAL & THERMIT
CORPORATION

General Offices: Rahway, New Jersey
Pittsburgh • Atlanta • Detroit
East Chicago • Los Angeles
In Canada: Metal & Thermit—United Chromium of Canada, Limited, Rexdale, Ont.

For more data circle 226 on Reader Service Card

that of natural rubber lining.

Fairprene T-5594 ready-cured synthetic rubber lining has been developed for tank lining applicators and firms doing their own lining. It is offered as part of a package consisting of primers and adhesives for adhering to supporting metal tanks, an adhesive for strapping seams, and a putty for filleting joints and corners.

This liner is available only in a two-ply, 50-inch width at one-eighth of an inch thickness. The cured lining is bonded to the tank structure with Fairprene 5127 adhesive cement through air drying.

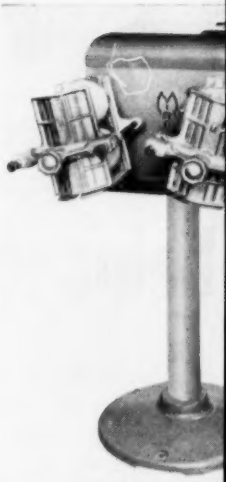
For more data circle **24** on Reader Service Card

★ ★ ★

Paint Mixer

A paint mixer recently introduced by Miracle Paint Rejuvenator Co., 127 E. Ninth St., St. Paul 1, Minn., will mix four quarts (or two quarts and one gallon) in one operation, without removing the paints from the containers.

Called the Miracle Challenger Paint Rejuvenator, the device is said to operate smoothly and quietly, with little vibration. It is equipped with an automatic timer. It may be used on a counter or pedestal mounted.



Paint Rejuvenator

For more data circle **25** on Reader Service Card

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RECAST & REMELT DIVISION

McAleer MANUFACTURING CORP.
101 S. WATERMAN DETROIT 17, MICH.

For more data circle **227** on Reader Service Card

Conductive Coating

A colloidal dispersion of copper in lacquer that produces a surface with good electrical conductivity has been introduced by Acheson Colloids Co., Huron, Mich. Designated No. 235, this dispersion is useful for providing a conductive film for printed circuits or electroplating non-conductors.

The dispersion may be applied by spray or brush. No baking is required. The film will air dry, so that it can be handled within a few minutes. Chemical and mechanical pretreatments (such as blasting or etching) may be used to improve adhesion of the coating to the base.

For more data circle **26** on Reader Service Card

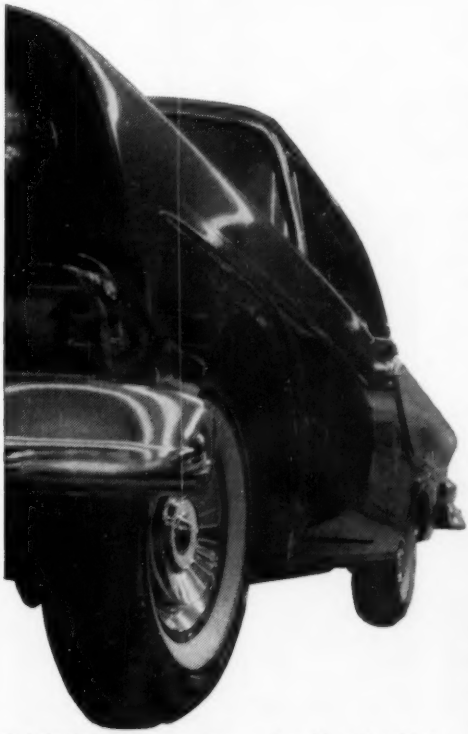
★ ★ ★

Color Concentrate

Logo, Inc., 13799 S. Avenue "O," has introduced a color concentrate for use in preparing finishes to be applied

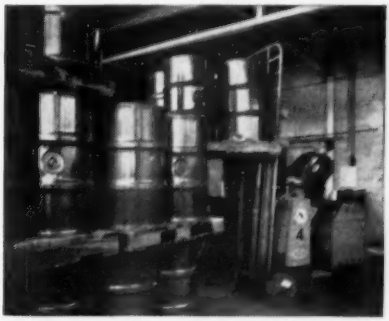
ACP *Granodine*® IS THE BASE

FOR SPARKLING, DURABLE PAINT FINISHES



ACP Granodine provides an excellent base for sparkling, durable paint finishes on automotive equipment, home appliances and industrial products by chemically converting steel surfaces to a nonmetallic phosphate coating. It not only greatly increases the adhesion of the finish, but also provides extremely good corrosion resistance even when used in conjunction with a relatively thin and flexible paint film. Granodine coatings are easily and economically applied to steel surfaces by dipping, spraying or brushing.

AN AUTOMOBILE requires a durable paint finish that retains its beauty under all weather conditions—ice and snow, sun and rain. ACP Granodine phosphate coating provides an excellent base for such a finish—greatly increases the adhesion of the paint to the metal.



IN INDUSTRY, drums, materials handling equipment, machine tools and many other steel products used throughout the plant are protected by a Granodine base.

LEARN ALL ABOUT ACP GRANODINE. Bulletin 1380 describes the various types of ACP Granodine and gives information which will help you select the proper type for your particular application. Write for your copy today.

AMERICAN CHEMICAL PAINT COMPANY, Ambler 14, Pa.

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New Chemical Horizons for Industry and Agriculture

For more data circle 228 on Reader Service Card

by silk screening or roller coating. Known as RV-300, this material may be used as an air-dry finish (tack-free in approximately 15 minutes, pack dry in two to three hours) or it may be baked.

On non-ferrous metals, LV-300 may be used without a primer. Use of a primer on ferrous metals will improve adhesion. Baking will also improve adhesion. The finish produced with this material is said to have good moisture resistance, adhesion, gloss, grease resistance and soap resistance. LV-300 is available as a clear or in standard colors.

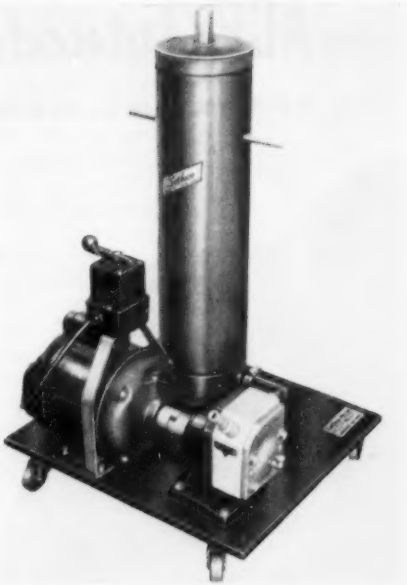
For more data circle **27** on Reader Service Card

★ ★ ★

Chromium Plating Filter Pump

Model VPHI-20 Chromium Plating Filter Pump removes particles down to one micron in size from chromium plating solutions as well as other acid or alkaline electroplating solutions. Capacity is 200 to 300 g.p.h.

Construction details include plastic construction, with no metal-wetted parts; a self-priming, leak-proof pump; a ¼-h.p., 100-volt, 60-cycle motor, totally enclosed; a reversal switch that allows cleaning the filter chamber without dismantling; and a filter chamber that houses two dynel filter tubes. Literature on this and other filter pumps is available from Sethco Mfg. Co., 70-72 Willoughby St., Brooklyn 1, New York.



Model VPHI-20V Self-Priming Filter Pump

For more data circle **28** on Reader Service Card

★ ★ ★

PVC Lining

The unplasticized polyvinyl chloride lining "Fligid," first introduced two

PROMAT has the finest in metal preparation, alloy plating, cadmium plating, chromate finishes, copper plating, zinc plating and miscellaneous purifiers and anti-foam agents.

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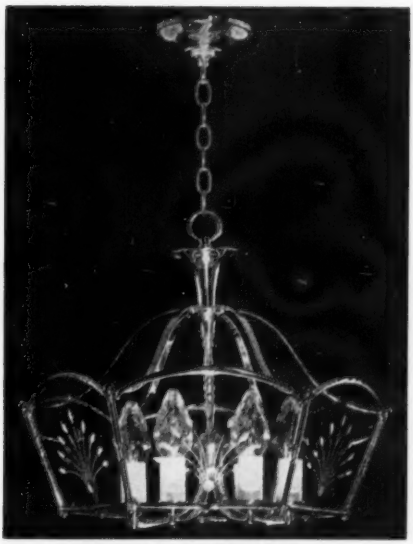

Fixture Illustration Courtesy H. A. Framburg & Co.

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For more data circle 230 on Reader Service Card

years ago by Kaykor Industries, Inc., Yardville, N. J., for the protection of tanks, vessels, and other process equipment against corrosion, is now available in two thicknesses, 0.055 inch thick and 0.085 inch thick.

This lining is a continuous laminate of unplasticized polyvinyl chloride on one face and plasticized polyvinyl chloride on the other; thus the strength and corrosion resistance of the unplasticized material is combined with the ability of the plasticized polyvinyl chloride to be bonded to such structural materials as steel, concrete, and wood. The laminate does not require curing, and can be applied quickly.

Both grades of "Fligid" lining offer chemical resistance to many corrosives: concentrated mineral acids, oxidizing agents, alkalies, and many organic compounds.

Other advantages of "Fligid" are its maximum operating temperature, 180-190 deg. F., and its good resistance to abrasion.

For more data circle 29 on Reader Service Card

★ ★ ★

Maintenance Coating

A method of protecting concrete, bituminous, mastic or other industrial floors against acids, water, and cutting oil damage has been announced by Maintenance Inc., Wooster, Ohio.

Applying J-16 maintenance coating

It consists of applying a seal coat of liquid Jennite J-16 over the exposed floors. This can be accomplished by either brush, spray or squeegee at the rate of one gallon per 100 square feet. While two coats are said to give adequate protection, three applications are recommended in extreme cases.

The final coat should be allowed to cure eight hours before use. If an abrasive surface is desired, it can be obtained by incorporation of silica sand into the top coat.

J-16 is said to withstand the attacks of most chemicals used in industry. It is completely impervious to water.

For more data circle 30 on Reader Service Card

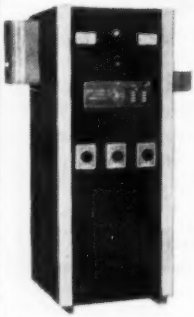
★ ★ ★

Safety-Colored Gloves

RSW-13 and NS-35 Stanzoil Industrial Gloves are now made in a coral tone instead of red.

The Pioneer Rubber Company, 285 Tiffin Rd., Willard, Ohio, maker of

GERMANIUM
rectifiers



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1622 DOUGLAS AVENUE • KALAMAZOO, MICHIGAN

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these gloves, states that safety and psychological factors are the reasons for the change. The bright coral shade is easily noticed and minimizes chances of hands being damaged in plant accidents. In addition, this color is more pleasing to the eye and makes hand protection more attractive to employees.

For more data circle 31 on Reader Service Card

★ ★ ★

Ultrasonic Unit for Large Tanks

The General Ultrasonics Company, Hartford, Connecticut, has developed an ultrasonic immersion transducer that provides 52 square inches of radiating area. It is designed for use in tanks and vats of unlimited volume, the manufacturer states.

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A foolproof solution which has been in use over 6 years in light and heavy production.

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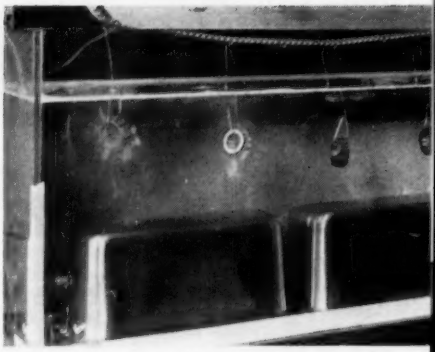


Completely assembled roller bearings being cleaned in 24-gallon tank of alkaline cleaner. This is a typical application of GU's hermetically welded Type D-52 Sonicell. Travel time of conveyor is 28 seconds. The two D-52 Sonicells are powered by a single Model 700 electronic-type generator.

The method used for coupling and reinforcing the crystal transducers (through solid metal matching elements) results in a high rate of energy conversion and longer life, it is stated.

Groups of these Sonicells are currently in use in conveyorized automatic cleaning machines.

The D-52 Sonicells operate at 20,000 cycles per second. This frequency has proved to be effective for cleaning, pickling, and plating processes. It is well above the audible range.

For more data circle 32 on Reader Service Card

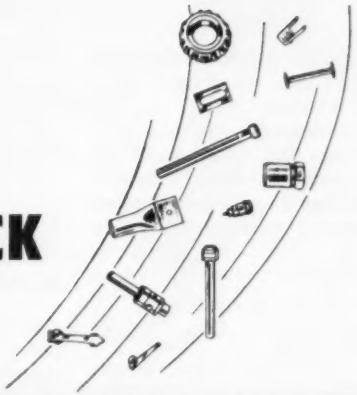
★ ★ ★

Barrel Truck

A Barrel Cradle Truck with specially designed curved top rails that hold a barrel firmly in position, preventing dangerous tipping, has been introduced by the Morse Manufacturing Company, 762 W. Manlius St., East Syracuse, New York.

Two other safety features incorporated on Barrel Cradle Truck No. 49 are non-skid devices, located directly forward of the front wheels on the

keep your production in the **BLACK** *with*



BLACK MAGIC

as illustrated by the rehabilitation of small tools*

Final inspection is the measure of successful production. That's why it is important to use BLACK MAGIC as the black oxide finish. It meets or surpasses government specifications and all other black oxide specifications.

Here are a few of the advantages of using BLACK MAGIC for tool maintenance.

- **Corrosion reduction**
- **Less chip adherence**
- **New tool appearance**
- **Sharper grinding**
- **Reflection reduction**
- **Improves cutting qualities**
- **Longer service life**
- **Reduces grinding time**

We would like to send you a reprint of an article entitled "New Life for Small Tools — Rehabilitation Treatment Cuts Resharpening 50%". It tells how manufacturers are saving thousands of dollars on tool maintenance.

* BLACK MAGIC PROCESS U. S. PATENT #2,355,007

Mitchell-Bradford

THE MITCHELL-BRADFORD CHEMICAL COMPANY
Wampus Lane, Milford, Connecticut

QUALITY PRODUCTS OF CHEMICAL RESEARCH

For more data circle **234** on Reader Service Card

rocker, and a safety catch on the nose piece. This prevents the barrel from sliding during loading.

This recent addition to Morse's complete line of drum and barrel handling equipment is said to afford greater ease of operation in moving loaded equipment around corners and into tight spots.

For more data circle **33** on Reader Service Card

★ ★ ★

Zinc Bright Dip

Conversion Chemical Corp., Rockville, Conn., has introduced a powder for use in producing a bath that brightens zinc-plated surfaces. The bath so produced will give a bright surface in one dip, with no brighteners required in the zinc bath, the manufacturer states.

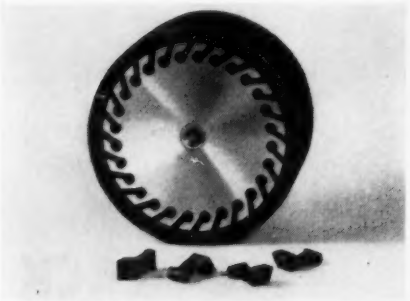
The process, which is said to require no ventilation, operates in the temperature range of 90-110 deg. F. It aids in corrosion protection and resistance to fingerprinting and staining, the manufacturer states.

For more data circle **34** on Reader Service Card

★ ★ ★

Expanding-Type Contact Wheel

A series of separate, replaceable rubber segments grip the coated abrasive and form the surface of the "Flexcore," a contact wheel recently introduced by Nu-Matic Grinders, Inc., Cleveland, Ohio.



Nu-Matic's Expanding-Type Contact Wheel

The interchangeable segment feature provides two advantages, according to Nu-Matic. First, as segments become worn or damaged, they can be replaced singly or in groups. The core never needs to be replaced. Second, segments are available in a variety of hardnesses and so can be used in any combination, to attain different degrees of cutting. For example, fast cutting is achieved by using hard segments and soft segments in alternate slots.

The "Flexcore" is designed so that complete peripheral contact is made with the coated-abrasive band. Nu-Matic states that this provides greater holding power on the abrasive band so that the wheel can be operated at

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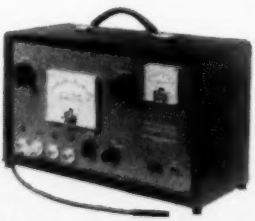

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For more data circle 236 on Reader Service Card

slower speeds. Each segment is anchored in the metal core by a key slot and cannot fly off the wheel, even if the abrasive band ruptures.

To replace a segment, the old segment is removed from its keyed slot and a new segment is inserted.

Wheel diameters of 3, 4, 5, and 6 inches are available. Widths are made to any specification. Standard segments are made to the full width of the wheel, but fractional-sized segments can be provided to obtain a "fingering" action for contouring use.

For more data circle **35** on Reader Service Card

★ ★ ★

Barrel Finishing Media

Norton Company has introduced a barrel finishing media: Tumblex "S" abrasive spheres. These spheres come in five different diameters and are made of Norton Alundum aluminum oxide abrasive.

The spheres are suitable for barrel finishing hard-to-contact recesses or

Before-and-after views of various parts barrel finished with Norton Alundum Spheres

intricate shapes, such as are encountered in finishing tubing, coil springs, scissor handles, bearing retainers, pump bodies and other parts where tumbling abrasives tend to wedge or will not reach.

Manufacturers of parts which may be suitable for finishing with these abrasive spheres may send samples to the Norton Sample Processing Laboratory. For information write to Norton Company, Worcester 6, Mass.

For more data circle **36** on Reader Service Card

★ ★ ★

Improved Degreasing Solvent

Octagon Process, Inc., 23 Bank St., Staten Island 1, N. Y., has announced that the formulation of Kearall 95 Cold Degreasing Solvent has been modified to give accelerated degreasing action, increased recovery rate and improved stability. The toxicity rating has been raised from 350 p.p.m. to 375 p.p.m., thus lessening danger to personnel using this material.

Kearall 95 can be used in convey-

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Economical, fast, non-electrolytic.

Sulphur Products Co., Inc.

McKeon Bldg., 621 W. Pittsburgh St., Greensburg, Pa.

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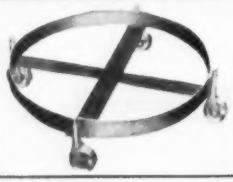

MORSE DRUM DOLLY No. 13

Perfect for vertical handling of open end drums. Easily handles loads up to 700 lbs. Built of 2½" steel for long life. 24" diameter; overall height 6½". Has four 3" dia. steel swivel casters for easy rolling into small areas. Rubber wheels available.

MORSE MFG. CO., INC. **$9.90** FOB

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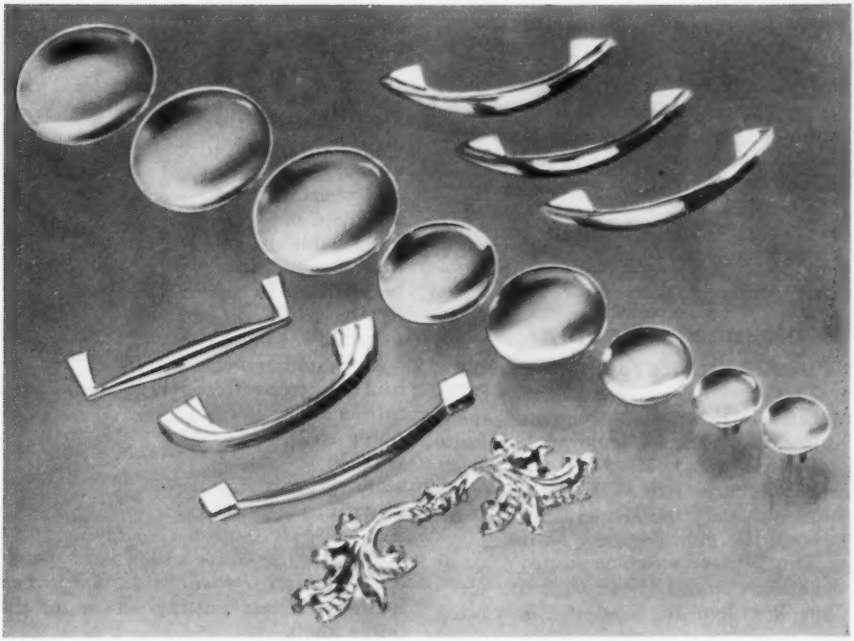

No SPECIAL HANDLING REQUESTED

Because vacuum-metallized pieces now can "take it," many products will be finished this new way.

More durable lacquers now protect the superb finishes only vacuum metallizing can produce at low cost. New lacquers and resins now stand up to rigorous abrasion tests and exposure to salt spray and high humidity.

This will mean new business for somebody. It could be you.

At CEC, we are ready to help you with a full range of vacuum coaters, headed by a large 48" model for fast, low-cost metallizing.

We'll be glad to send you bulletins, and share our experience in helping you set up operations.

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Rochester Division, Rochester 3, N. Y.
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CEC

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For more data circle 239 on Reader Service Card

orized cold-degreasing operations or in single dip tanks. It requires no water or solvent rinse. It leaves no oily residue on finished work, it is stated.

Kearall 95 dries rapidly and is non-corrosive to metals. It is non-explosive.
For more data circle **37** on Reader Service Card

★ ★ ★

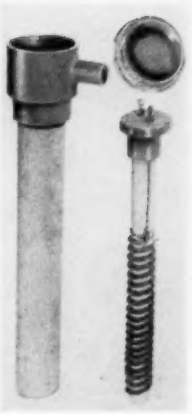
Replaceable-Element Quartz Immersion Heater

The recently announced Pyrosil Fused-Silica Replaceable-Element Immersion Heater allows indefinite use of the quartz shell and acid-resistant boot and cap. When there is a burn-out, only the element need be replaced, the manufacturer states.

The heater is explosion-proof, as it breathes constantly through the junction box lead-in conduit, preventing pressure build-up inside of the shell.

Four interchangeable sizes are available. By using the same quartz shell and acid-resistant boot and cap, only the replaceable heating elements need be changed in order to attain different k.w. ranges.

This immersion heater incorporates a heavy-duty outer shell which is able to withstand greater mechanical shock. The low-temperature element on a spiraled silica core, which is suspended, allows the wire to expand when heated without putting strain on the outer shell.



Pyrosil Replaceable-Element Heater

Applications for the Pyrosil immersion heater include heating of acids (except hydroflouric and phosphoric); heating paints, oil, plastics, dyestuffs and chemicals; condensing; dehydrating; and melting waxes.

Literature is available from Pyrosil, Inc., Cuyahoga Falls, Ohio.
For more data circle **38** on Reader Service Card

★ ★ ★

Teflon Spiral Washer Nozzles

Bete Fog Nozzle, Inc., Greenfield, Mass., has introduced 14 models of Teflon spiral nozzles.

It is now possible to obtain full cone spray patterns both wide angle (120 degrees) and narrow angle (90 degrees), in addition to the hollow cone models manufactured by this company. A wider range of flow rates is available.

The complete line, called the TF series, now includes nozzles with ori-

FUNCTIONAL FINISHES!!

If you require your coatings to accomplish some specific task — something beyond mere ornamental appearance or average longevity —

Try Us!

We make ACRYLIC, ALKYD, CELLULOSIC and VINYLOID coatings for a very wide range of specialized industrial applications.

The Varnish Products Co.

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Cleveland, Ohio

For more data circle **240** on Reader Service Card

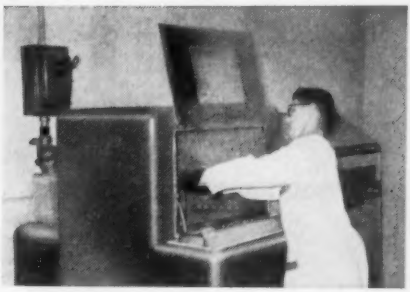
KLEM

PRODUCT OF THE MONTH

KLEM-FILM

A new vinyl plastic protective coating that can be sprayed or brushed on paint spray booths. This new product, "Klem-Film," can

be peeled off, removing paint deposit with it and leaving the booth clean. It offers several other advantages. (1) It dries extremely fast. (2) It is white in color, providing reflective light in the booth. (3) It will not support combustion when dry. (4) It has unusual tensile strength, peeling off in large sheets and speeding the job. (5) It does not lose its elasticity even when subjected for a long period to heat as high as 290°F. "Klem-Film" can be applied to other equipment than spray booths to protect them in use and in storage.



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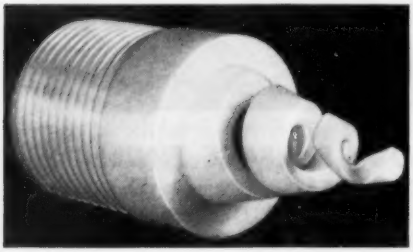
fices from ⅛ inch in diameter to ½ inch in diameter and with flow rates from two to 70 g.p.m.

The exclusive Bete spiral design



Bete TF Series Teflon Spiral Washer Nozzle

atomizes the fluid without vanes or internal parts. Particles smaller than the orifice pass through the nozzle freely.

Each nozzle is made from a single piece of Teflon. The Teflon has good erosion resistance, it is stated.

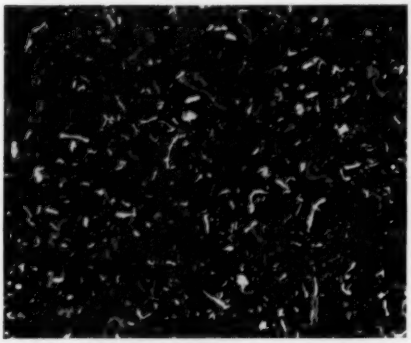
For more data circle **39** on Reader Service Card

★ ★ ★

Multi-Colored Lacquer

Paramount Paint & Lacquer Co., 3411 E. 15th St., Los Angeles, Calif., has introduced a coarser pattern of its multi-colored lacquer, Zolatone.

Zolatone "Tadpoles" can be added to any multi-color combination, which in turn can be sprayed onto any properly prepared surface, creating a spattered effect in a single operation. The Zolatone Process has several unusual



Paramount Paint's Multi-Color Lacquer

properties, it is stated. Non-static and therefore dirt and grime repellent, these lacquers are completely scrubbable, and do a good job of hiding flaws, the manufacturer states.

Zolatone has a wide range of industrial uses. It is available in patterns ranging from Tadpoles to extra fine and in 6,000 custom and stock multicolors.

For more data circle **40** on Reader Service Card

★ ★ ★

Phosphatizing Compound

Oakite CrysCoat No. 47 is designed to produce an iron phosphate coating of 80 to 120 milligrams in metal spray

GARDNER SCRATCH THICKNESS GAGE

For measuring the dry thickness of coatings applied to any base such as WOOD, GLASS, METAL, PLASTIC, etc.

Write for description.

GARDNER LABORATORY, INC.

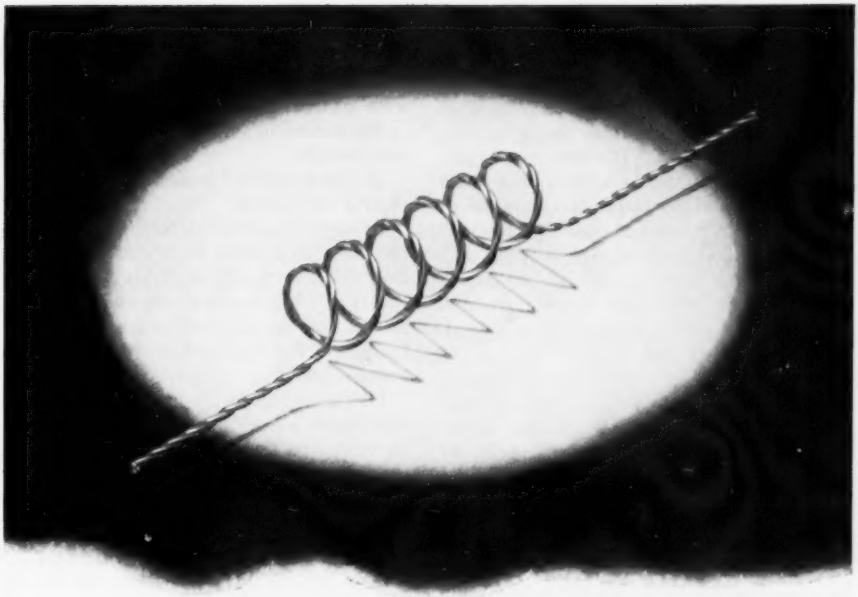
P. O. BOX 5728 PF
BETHESDA 14, MD.

For more data circle **242** on Reader Service Card

MARY

Please come home. I took your advice about bettering myself and enrolled for ELECTROPLATING KNOW HOW home study training six months ago with the JOSEPH B. KUSHNER ELECTROPLATING SCHOOL of STROUDSBURG, PA., just as you suggested. You were right — I've already gotten two raises and things look real bright. Come back honey. I can swing that fur coat you wanted so badly now. Your ever lovin' hubby, Bill.

For more data circle **243** on Reader Service Card



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Sylvania Tungsten Coils

In both batch and continuous vacuum metallizing operations, Sylvania tungsten heater source coils are designed to give you more shots per dollar.

Manufactured under exacting standards of uniformity and high metal purity, these Sylvania heater coils are produced expressly for vacuum metallizing service. Special tungsten wire is stranded and coiled to specifications established through Sylvania's own experience in the production of reflector lamps—as well as the experience of others. Sylvania offers you a wide selection of ready-made tungsten coils, in single or multiple strand. If you prefer to form your own heater source coils, there is a full range of diameters and types of Sylvania tungsten wire to choose from.

Write for the new booklet, "Sylvania Tungsten Coil Products."

Sylvania Electric Products Inc
Tungsten and Chemical Division
Towanda, Penna.

Tungsten • Molybdenum • Chemicals • Phosphors • Semiconductors

SYLVANIA

Lighting • Radio • Electronics • Television • Atomic Energy

For more data circle **244** on Reader Service Card

washing machines. The compound cleans and phosphatizes in a simple 3-stage operation. It removes light oils, grease, spinning compounds and shop soils and converts the surface of steel and iron into a coating that resists corrosion and improves paint adhesion. The coating, under standard finishes, has withstood more than 600 hour of salt spray testing, it is stated.

Oakite CrysCoat No. 47 is used at 1½ to 2½ ounces per gallon of water in the first stage of the washing machine. It is followed by a hot water rinse, then by hot chromic acid or Oakite CrysCoat FH rinse.

Among the advantages claimed for this phosphatizing compound are the following: has stability in solution despite minor changes in pH; rate of coating is rapid; imparts good corrosion resistance; has low-foaming characteristics; is not harmful to equipment; and cleans aluminum, brass, and ferrous metals.

Further information about Oakite CrysCoat No. 47 is available from Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

For more data circle **41** on Reader Service Card

★ ★ ★

Primer-Finish Coat

Tenax Finishing Products Company, 390 Adams St., Newark 5, N. J., has announced the development of "Gripalloy," an organic finish which can be used as a primer or a finish coat. The outstanding feature of Gripalloy is its adhesion to more than 25 different metals.

It has excellent resistance to atmospheric oxidation.

In an exposure test of the product on untreated steel that was degreased and then knife cut with an "X" across the face of the panel, no rust traveled under the paint film in any area, although all exposed metal surfaces rusted badly.

Gripalloy may be used by finishers who need a good primer coat and who do not have the facilities to chemically prepare the surface for painting.

For more data circle **42** on Reader Service Card

★ ★ ★

Line-Operated pH Meter

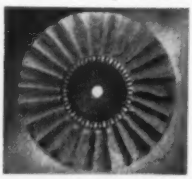
The Photovolt pH Meter Model 85 is designed to be used by operators with limited training. It is said to have an accuracy of 0.1 pH unit.

Model 85 can be furnished with either individual glass and calomel electrodes or with "probe" electrodes —a combination of glass and calomel electrodes. The instrument's scale is two and one-half inches long, with 70 division lines reading from pH 0 to 14, continuous through neutral without switching.

The Photovolt pH Meter Model 85 is stabilized for a wide range of line-voltage fluctuations, is unaffected by line-frequency variations. Literature is available from the Photovolt Corporation, 95 Madison Ave., New York 16, New York.

For more data circle **43** on Reader Service Card

Cooler, Faster Buffing



with 45° Spoke Buffs

Patented spoke mounting principle maintains best cutting angle of 45° for faster, smoother cutting with less pressure and no streaks. Ventilation from 24 openings.

Write for folder.

GUARANTEED BUFF CO., INC.

20 Vandam St. New York 13, N. Y.

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★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

For further information on any product mentioned in this issue — use the READER SERVICE CARDS inside front cover.

★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★ ★

Meet Jack Reynolds, citizen-airman

Any town in the land would be proud to claim
Jack Reynolds as a resident . . .
For Jack has the wholehearted devotion of his family,
the respect of his neighbors,
and the outspoken regard of his employer . . .
Jack lives by a definite set of values, too.
Among them, he counts being a good citizen as
important as being a good provider . . .
That's why Jack Reynolds sets aside certain weekends
for the business of America's defense . . .
Why he trains with the Air Force Reserve to be ready
to protect and defend the freedoms we cherish . . .
And frankly, he looks forward to turning out with
his fellow Air Reservists . . .
To the comradeship and "feeling of belonging"
he experiences while doing a worthwhile service
for both his family and his country . . .

For Information About YOUR Place in the Air Force Reserve, call, write or visit your local Air Reserve Center

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News of the Industry

New plants . . . company news . . . new positions . . . meetings . . . societies

NEW PLANTS

Imperial Rack Company of Flint, Michigan, has announced the opening of a Canadian plant. L. D. Faulman, president of Imperial Rack Company, said that their new branch plant has been established to supply racks, fixtures, and accessories to the Canadian plating industry.

The new Canadian Imperial Rack Company is located on Oxford Street, East, in London, Ontario. The entire plant has been renovated so that all phases of rack manufacture can be handled.

Canadian Imperial Rack Co.: new location

★ ★ ★

The Fitzgerald Plating Company, Detroit, Mich., has moved into a new plant at 17450 Filer in northeastern Detroit.

The new building, devoted entirely to barrel plating, has an area of 10,000 square feet.

Complete barrel plating service is performed, including zinc, cadmium, copper and phosphate coating. The Udylite barrel equipment is entirely new.

New Plant, Fitzgerald Plating Co., Detroit, Michigan: complete barrel plating facilities

Drawing of new Parker Rust Proof manufacturing plant now being built in St. Louis, Mo.

Parker Rust Proof Company's sixth manufacturing plant is now being built in St. Louis, Missouri, and will be in full operation by next June, the company has announced.

The new plant, which is to have an area of 40,000 square feet, will house manufacturing facilities and warehouse space for Parker products used in surface treatment of metals.

★ ★ ★

Harold Rosenberg, president of **Octagon Process, Inc.,** Staten Island, N. Y., has announced the acquisition of 21,000 square feet of additional manufacturing and storage facilities in buildings adjacent to the Staten Island plant. These additional facilities will be used to expand production of industrial cleaning and protective chemical products.

★ ★ ★

Atlas Powder Company has recently broken ground for a $3,000,000 Technical Center, which will enable the company to intensify its long-range basic research program, as well as to expand its technical service to the entire electroplating industry.

The center will be located adjacent to the company's general offices near Wilmington, Delaware. It is scheduled for completion by the end of this year.

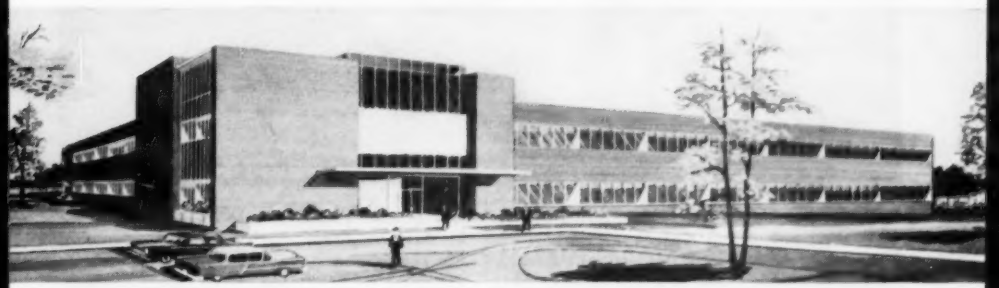
The Technical Center will provide extensive facilities for research in sorbitol, emulsifiers, detergents, polyester resins, activated carbons, explosives, and other products.

★ ★ ★

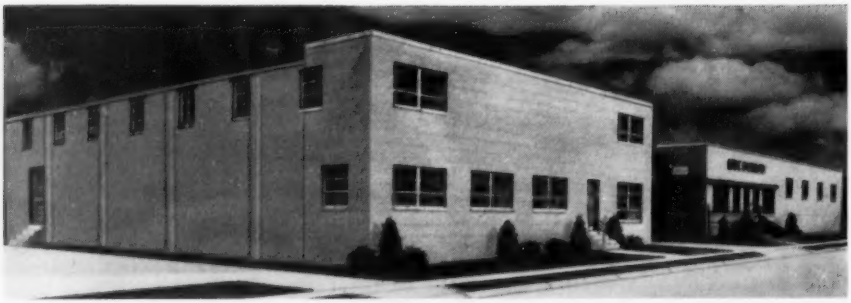
A new bulk terminal specially designed for handling perchlorethylene, a solvent widely used for drycleaning and for industrial degreasing, has been put into operation by the **McClintic-Gordon Company,** McKees Rocks, Pennsylvania.

Operated for **Diamond Alkali Company,** Cleveland, Ohio, the terminal consists of a 225,000-gallon storage tank, filtering and drying equipment, a 15,000-gallon plastic-lined holding tank, drumming facilities, a storage warehouse, and supporting docking and pumping facilities to accommodate barge shipments of perchlorethylene from Diamond's Deer Park Plant at Houston, Texas.

The new bulk terminal is operated



Architect's drawing shows Atlas Powder Company's new Technical Center, now being built



MacDermid, Incorporated: recently expanded plant facilities in Ferndale, Michigan

by McClintic-Gordon Company, a subsidiary of The Gordon Lubricating Company.

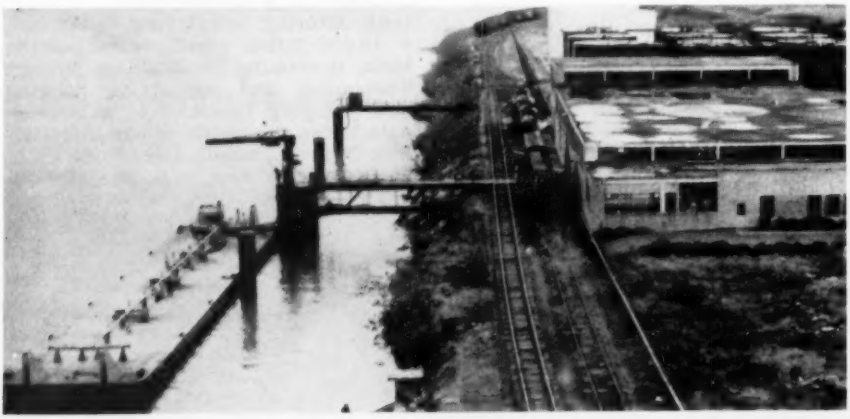
Robert M. Gordon, Sr., president of the Gordon Lubricating Company, said that "the new terminal facility is the first of its kind for this particular chemical on the Ohio River system."

Distribution of this Diamond solvent will be by tank car, tank truck, carload and truckload drum shipments by rail and highway from McKees Rocks throughout a 15-state area, extending from New England to West Virginia, Virginia and Kentucky, and from the East to Ohio and western Michigan.

★ ★ ★

MacDermid Incorporated, Waterbury, Conn., recently has expanded plant facilities in Ferndale, Michigan.

Laboratory, office space and plant capacity have been doubled by the 9,000-square-foot addition.



First barge shipment of perchlorethylene from Diamond Alkali Company's Deer Park Plant at Houston, Texas, to McClintic-Gordon Company, McKees Rocks, Pennsylvania, was completed in late November. Distribution of this Diamond chemical is now being made by tank car, tank truck and drum shipment via rail and highway to drycleaning supply distributors and metalworking plants throughout the northeastern United States.

Conforming Matrix Corporation, Toledo, Ohio, manufacturer of spray decorating masks, mask washers and standard and special spray painting machines, has leased an additional 5,000 square feet to be added to the machine building division, according to an announcement by R. E. MacArthur, president.

The nickel tank capacity also is being doubled in the mask manufacturing department. A research and development department has been set up, and a complete spray decorating display showroom will be set up for viewing new developments and testing the painting of customer parts on various types of machines.

COMPANIES

Greater emphasis on industrial research and better utilization of manpower are essential for industry to realize the profit potentials inherent in a "dynamic decade" now unfolding throughout the West.

This is the view expressed by W. P. Fuller Brawner, president of **W. P. Fuller & Co.,** following a year of administrative reorganization of his company to "cope with the unprecedented markets mushrooming in the Western States."

In addition to reorganizing its administrative pattern within the last year, Fuller is building a half-million dollar installation in South San Francisco. It will be the largest paint research laboratory in the West. The company has also begun construction of an office-warehouse in Anchorage, Alaska; has established a large factory in Manila; and has contracted with the Republic of Panama for a permit to construct and operate a warehouse and distributing center there. Also the company is now negotiating with industrial interests in Japan for the development of a cooperative manufacturing and sales project.

★ ★ ★

S. G. Bart, president of **Bart Manufacturing Corporation,** has recently announced the purchase of all outstanding stock of the Bart Manufacturing Corporation, including the **Bart Laboratories Division,** as well as the stock of **Electroplating Design, Inc.,** a design and chemical research company. No change of address or policy is anticipated for either company. At the same time, Mr. Bart divested himself of all connection with the plating equipment and supply business. Both of Mr. Bart's companies will continue research and manufacture of Lectro-Clad sheet and plate, nickel plated pipe, Lectroforming, nickel plated propeller blades, and precious metal plating.

★ ★ ★

Grand Prize winners have been announced in the **Maas & Waldstein Co.** Annual Sales Contest for Industrial Product Finishes technical sales representatives. Winners in the Smith-Davis Co. Division were **L. B. Kelly, H. Gibbons,** and **R. R. Stark.** Mid-West and Eastern Division winners

QUALITY EQUIPMENT
PRICED RIGHT AND READY FOR IMMEDIATE SHIPMENT

BUFFING AND POLISHING EQUIPMENT

100 Hammond—Divine—U. S. Electric—Holland — Standard Electric — L'Hommedieu single speed and variable speed buffing and polishing machines. 1 to 20 HP.

6 Rotary Machines: Hammond—Acme—Packermatic.

Complete buffing systems for above machines, including hoods, cyclones, dust boxes, pipes, motors and blowers; various sizes.

Semi-automatic machines: Buffalo—Hammond Acme—Divine—Production.

ALL EQUIPMENT IN STOCK
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all quoted subject to prior sale.

J. HOLLAND & SONS, INC.
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were **P. L. Blay, C. F. O'Neill, H. L. Shipman** and **K. A. Smiley.**

In addition to the Grand Prize, secondary prizes were awarded to representatives of all three divisions for outstanding achievement during the past year.

B. F. Ames, vice president of the company, made the awards at the company's regular sales meetings.

★ ★ ★

The G. S. Plastics Co., with a new plant and offices at 15583 Brookpark Rd., Cleveland 11, Ohio, is the newest member of a group of associated firms including The General Supply Co., The G. S. Equipment Co. and The Singleton Co., all of which serve the chemical processing, electroplating and manufacturing industries.

William A. Munkacsy is president of the company. Associated with him is Thomas R. Gill, president of General Supply and G. S. Equipment, and vice-president of Singleton. Mr. Munkacsy was formerly president of Munray Products and Poly-Cyclo Products of Cleveland.

The three major services provided for industry by this company are (1) a custom service of applying coatings, using plastisol, epoxy, vinyl and neoprene; (2) the manufacture of these coatings for resale; and (3) the manufacture of completed and coated equipment. Coating compounds handled by the company are commonly used as inner linings and outer coatings for tanks, ducts, plating racks, material handling equipment, rolls, baskets, chutes, hangers and conveyor parts.

Charles Schlott

T. R. Gill

Charles Schlott, salesman for the **Egyptian Lacquer Manufacturing Co.** has retired after 50 years' service. In recent years Mr. Schlott covered the New York metropolitan area. He was a member of the American Electroplaters' Society for 41 years, during which time he had been made president of the Good Fellowship Club. He was recently made an honorary life member of the A.E.S.

★ ★ ★

Savings in deburring and polishing stainless steel tubular parts has won second prize for **J. Bishop & Co.,** of Malvern, Pennsylvania, in a recent contest conducted by **Almco, Division of Queen Stove Works, Inc.,** Albert Lea, Minnesota. The award included a 50-dollar check and a certificate.

J. Bishop & Co. cut deburring costs by using Almco barrel finishing equipment to remove burrs left by hand milling. The Pennsylvania firm reportedly achieved excellent uniformity with an Almco Model DB-200.

Almco produces many types of barrel finishing machines, including fixture models to hold large parts; submerged equipment; automated systems and special models.

All firms using Almco's barrel finishing equipment are eligible for Alm-

PAINT STORAGE CABINETS

For Safe Storage of Inflammables

Approved by Leading Municipal Departments
Meets Requirements of Major Underwriters

SPECIFICATIONS

Double Walled	Natural Ventilation
1½" Air Space	Self Closing Doors
16 Gauge Shell	Three Point Latch

All Welded Construction

Standard Cabinets 40-60-90-135-180 Gallon Capacities. Capacities Based on 5 Gal. Cans. Drum Cabinets Also Available. 40 Gal. Capacity $95.00. *Write US for full information.*

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co Supersheen awards. Entry blanks and complete details can be obtained from Almco, Div. of Queen Stove Works, Inc., Albert Lea, Minnesota.

★ ★ ★

M. F. Earley, Meyersdale, Pennsylvania, is no longer associated with **Sulphur Products Co., Inc.,** Greensburg, Pennsylvania.

★ ★ ★

Sel-Rex Corporation displayed a huge, custom-built Sel-Rex germanium rectifier at the 22nd National Exposition of Power and Mechanical Engineering, held recently in New York's Coliseum.

Custom-engineered for a prominent manufacturer, to whom it was delivered after the show, the display Sel-Rex rectifier was equipped with a water-cooled heat exchanger, Sel-Rex Gard-A-Matic Overload Protection, and an intricate programming device which automatically puts the unit through a series of controlled voltage cycles, as required by certain manufacturing operations.

William H. Wendel, group vice president of **The Carborundum Company,** has announced the establishment of **"The Tony Clark Award,"** which will be presented annually to the employee of the Coated Abrasives Division who best exemplifies the spirit of that division.

The Tony Clark Award Committee is presently reviewing 1956 and will soon announce the first winner. Members of the committee are John Claydon, general manager of the division; Thomas Welch, manufacturing manager; William Van Ormer, manager of Product Engineering; Herbert Dales, industrial sales manager; H. C. Smith, Jr., merchandising sales manager; Walter Lare, industrial relations manager; and Arthur Tiffany, division controller.

The Tony Clark Award will consist of a mantle clock, appropriately engraved; a Tony Clark Award lapel pin; cash payment of $500; and the award winner's name will be engraved on The Tony Clark Award plaque to be installed in the reception room of the Coated Abrasives Division.

Sel-Rex Booth at the recent Power Show featured huge, custom-built germanium rectifier

"The Tony Clark Award" is named for **H. C. "Tony" Clark,** member of Carborundum's board of directors, and former president of the company. Mr. Clark, when president, established the Coated Abrasives Division. During his administration the Wheatfield plant was purchased, remodeled and made a division of the company.

★ ★ ★

At the recent annual District Sales Managers' Conference of the **J. B. Ford Division,** a series of field and home office instructional sessions for **Wyandotte Chemicals** representatives were scheduled. Known as "Quality Plus" training, they will be held throughout the year. They are designed to aid in providing Wyandotte customers with capable technical assistance in cleaning, washing and germicidal operations. The sessions will emphasize the use of simple testing and control devices, based on modern scientific knowledge. Information on new Wyandotte production aids will be released during the year.

A substantial sales increase for the company's major product lines in 1957 has been predicted by **Metal & Thermit Corporation,** producer of tin chemicals and industrial chemicals.

All the company's products should share substantially in the economic prosperity forecast for 1957, said H. E. Martin, president. Growth of the chemical industry will add to company revenues from sale of tin chemicals and other industrial chemicals, as well as electroplating and welding products.

Disturbances abroad have not adversely affected the recovery of tin or its use, Mr. Martin pointed out. "Closing of the Suez Canal necessitates longer transportation routes to bring tin to the U. S. market, but there seems to be no present indication of government restrictions on uses of tin," he said.

The year 1956 was one of transition and expansion for Metal & Thermit, the chief executive officer pointed out. "To improve the company's position in all its markets, the company

Wyandotte Chemicals J. B. Ford Division representatives are shown at a recent sales conference. Shown left to right are Fred Tholen, sales manager; Don Anderson, director of Technical Service Department; Ed Kubis, manager of Industrial Sales; Jim Ramsey, manager of Railroad Sales; P. N. Burkard, manager of Industrial, Railroad and Aircraft Department; and Ford Ballantyne, Jr., a Wyandotte Chemicals vice president and general manager of the J. B. Ford Division. Session planned for training representatives.

strengthened its sales, research and market development departments," he said. Highlights of Metal & Thermit's expansion program as outlined by Mr. Martin include the following developments: A subsidiary company, United Chromium, Inc., was consolidated into the parent company; a new office building was opened in Rahway, N. J.; the company purchased a large plot of land in Carrollton, Ky., where a new organic chemical plant will be erected; the company's new Canadian operations center in Toronto is expected to be in full operation in 1957; the Glenn Company in Oakland, Calif., was acquired, and the M & T Welding Products Corp. was formed; and ground is being broken in Virginia for a new ore-processing plant.

★ ★ ★

Sel-Rex Corporation has merged with Bart-Messing Corporation, manufacturer and distributor of rectifiers, liquid clarification filters and metal finishing equipment and supplies.

The merged companies will be known as Sel-Rex Corporation. The business formerly conducted by each individually will be carried on by the same personnel in divisions within the new corporate structure. There will be no change in management, facilities or operations.

NEW POSITIONS

Arthur B. Tillman, assistant works manager, Operations, at the Painesville, Ohio, Plant of **Diamond Alkali Company,** Cleveland, Ohio, has been promoted to the newly created position of Electro Chemicals Division operations manager.

At his new post, Mr. Tillman will be responsible for operations at Diamond electrolytic chlorine-caustic soda plants in Painesville, Ohio; Houston, Texas; Pine Bluff, Arkansas; Muscle Shoals, Alabama, and Edgewood, Maryland.

★ ★ ★

Robert L. Driscoll has joined **Better Finishes and Coatings, Inc.,** 268 Doremus Ave., Newark, N. J., as New England representative for that company's line of industrial finishes, architectural and maintenance paints and strippable coatings.

Prior to joining Better Finishes, Mr. Driscoll represented the Keystone Paint and Varnish Company of Brooklyn, N. Y., in New England and Ohio.

A. W. Sokolowski

Robert L. Driscoll

The appointment of **A. W. Sokolowski** to vice president of engineering has been announced by **The Lanly Company,** Cleveland, Ohio. Mr. Sokolowski joined Lanly in 1939 and in 1946 became chief engineer, a position he will continue to hold.

The Lanly Company designs and constructs all types of industrial heat processing equipment, including ovens, dryers, and low-temperature furnaces.

MEETINGS

The **Second Annual Educational Session of the Southeastern Branch, A.E.S.,** will be held on February 8 and 9 in the Atlanta-Biltmore Hotel, Atlanta, Ga.

The technical session will include the following papers:

Bright Copper Plating by Dr. H. A. Kellner of the Lea Manufacturing Company.

Some Aspects of Plating Brass by Henry Strow of True Brite Chemical Products Co.

Bright Chromium Plating by a representative of the Metal & Thermit Corporation.

Roughness and Pitting in Plating

A. E. S. ANNUAL TRI-STATE REGIONAL MEETING, French Lick-Sheraton Hotel, French Lick, Ind., March 30.

by Richard Fellows of the Udylite Corporation.

New Developments in Rectifiers by C. Ivins of the Hanson-Van Winkle-Munning Co.

Behavior of Multiple Coatings of Nickel and Chromium by Dr. A. Kenneth Graham.

Registration for the meeting will begin Friday morning, Feb. 8. The program will include entertainment for the ladies. The principal social event of the meeting will be a dinner dance, to be held on Saturday, Feb. 9. Tickets, at $15.00 per couple, are available from the treasurer, Southeastern Branch, A.E.S., 1078 Washington St., S.W., Atlanta 15, Ga.

★ ★ ★

The Dayton Branch of the American Electroplaters' Society will hold its **Eleventh Annual Educational Session and Dinner Dance** on Saturday, March 9, at the Hotel Biltmore, Dayton, Ohio.

The educational session will begin at 1:30 P.M. The speakers and their topics are as follows:

Finishing Magnesium, by C. E. Kimmel, Dow Chemical Co.

Surface Preparation of Stainless Steel, by Kenneth M. Huston, Armco Steel Corp.

Latest Developments in Nickel Plating, by Myron Diggin, Hanson-Van Winkle-Munning Co.

The Dinner Dance in the main ballroom will start at 6:30 P.M. Tickets are available at $6.50 per plate from Bennie Cohen, ticket chairman, 1256 Wilson Dr., Dayton 7, Ohio.

★ ★ ★

The **Annual Tri-State Regional Meeting, A.E.S.**, will be held March 30 at the French Lick-Sheraton Hotel, French Lick, Indiana. This meeting is sponsored by the **Cincinnati, Columbus, Dayton, Indianapolis,** and **Louisville Branches** of the **A.E.S.** Host Branch for this Regional Meeting is the **Indianapolis Branch,** with **Frederick Anderson** as chairman, and **Les Reynolds** as co-chairman. All individuals in the tri-state area concerned with plating processes are cordially invited to attend this meeting. A special invitation has been extended to the **St. Joseph Valley (Indiana) Branch** of the A.E.S.

R. O. Hull

Loren Stevens has arranged for Educational Program, scheduled for 2:00 P.M. **Dr. Samuel Heiman,** president of the American Electroplaters' Society, will serve as moderator. The following papers will be presented:

C. F. Nixon

Dr. Samuel Heiman

The Practical Application of the Hull Cell to the More Common Plating Solutions, by R. O. Hull, R. O. Hull & Co., Inc., Rocky River, Ohio.

Role of Ultrasonics in Electroplating, by Dr. T. J. Bulat, head, Ultrasonic Application Laboratory, Pioneer-Central Div., Bendix Aviation Corp., Davenport, Iowa.

Introduction to Nickel Conservation, by C. F. Nixon, head, Electrochemistry Dept., General Motors Research, Detroit, Michigan.

A luncheon and style show for the ladies has been planned. The banquet and evening entertainment is scheduled for 7:00 P.M. Banquet tickets, at $7.50 per person, may be obtained from **Bert Hawhee,** 6431 N. Oxford Ave., Indianapolis, Indiana, or from branch representatives.

★ ★ ★

Charles Douglas, outing chairman for the **44th Annual Convention of the American Electroplaters' Society,** which will be held in Montreal, Canada, June 16-20, states that plans have been completed for the annual outing.

The outing will include a trip through St. Rose, which is situated on the banks of the Riviers des Milles Iles, a gateway to the Laurentian Mountains. The group will be taken through numerous colorful villages typical of Quebec, and luncheon will be served at a resort hotel. Time will be allowed for a stroll through scenic grounds, and the trip will be planned to return to the Sheraton-Mount Royal Hotel, convention headquarters, by 5:00 P.M.

TRAINING COURSES

An unusual change of professions —from medicine to furniture manufacturing—came to light recently at the **DeVilbiss Company's School of Spray Finishing.**

A woman medical technician from Vermont, Mrs. Harriet Manning, has laid aside her white smock and hypodermic needles to manage a furniture manufacturing company.

Working as a technician in cancer research, Mrs. Manning was suddenly informed not long ago that her father had suffered a heart attack and could no longer actively manage the Anderson Manufacturing Company, of Orleans, Vermont. The firm specializes in the productoin of occasional tables for the home. The father asked Mrs. Manning to take over the managership.

Determined to master all phases of the business, Mrs. Manning quickly realized the importance of finishes on her products. This is where the DeVilbiss school offered assistance. On recommendation of one of her suppliers of finishing materials, Mrs. Manning enrolled at the DeVilbiss spray finishing school in Toledo for the full week of instruction in spray techniques, materials and equipment. She absorbed the classroom instruction and demonstrations and participated in the laboratory workshop activities, well equipped when she completed the course to impart valuable improvements and economies in her finishing operations.

The DeVilbiss School of Spray Finishing costs nothing to those who attend, the sole expense being for transportation, meals and lodging during

Mrs. Harriet Manning has attended DeVilbiss School of Spray Finishing to aid her in operating her family's furniture factory in Orleans, Vermont. She is shown listening to Instructor Tony Stranges discussing spray guns while chief Instructor Irvin Thomas looks on.

the Monday-through-Friday class sessions. It is available to users, or prospective users, of DeVilbiss equipment. Applications may be made by writing to the DeVilbiss Company, 300 Phillips Ave., Toledo 1, Ohio.

Dates for courses of instruction during the first half of 1957 at the DeVilbiss Company School of Spray Finishing in Toledo are as follows: January 7, February 4, March 11, April 1, May 6 and June 3.

★ ★ ★

Ten grants-in-aid of $250.00 each have been awarded to ten chemistry students at North Dakota Agricultural College by the **Federation of Paint and Varnish Production Clubs,** technical association of the protective and decorative coatings industry.

Each of the awards' recipients is now enrolled in the School of Chemical Technology. In their senior year they will take courses in paint technology under Dr. Wouter Bosch, chairman of the Department of Paints, Varnishes, and Lacquers.

Other educational and research programs under the sponsorship of the Federation are now in progress at New York University, Case Institute of Technology, University of Louisville and other universities.

SOCIETIES

Harold W. Baker

Harold W. Baker, Electro Galvanizing Company, Chicago, has been named 1957 annual meeting chairman of the **National Association of Metal Finishers.** According to an announcement by NAMF president John Palik, Jr., Mr. Baker will be in charge of all meetings, including a management seminar, meetings of the membership and board of directors, and a traditional banquet.

Mr. Baker is chairman of the NAMF affiliate, the Chicago Electro Platers Institute. He is also a member of the NAMF board of directors.

The National Association of Metal Finishers will hold its annual convention at the Sheraton-Mount Royal Hotel, Montreal, Canada, June 16 and 17, 1957, concurrent with the 44th annual meeting of the American Electroplaters' Society.

Student recipients of grants-in-aid made by the Federation of Paint & Varnish Production Clubs at North Dakota Agricultural College. (Left to right) David Anderson, James Young, Betty Thompson, Patrick McIlwain, William Lantz, Norman Vennerstrom, Melvin Weber, David Bragg, Mary Hess, Homer Rothfusz. All will take courses in paint technology.

R. D. Wysong

Leslie Dively

On Dec. 7, the **Milwaukee Branch, A.E.S.,** formed an **Organic Division** and held a dual meeting. The first meeting of the Organic Division was attended by over 100 members and guests. **R. D. Wysong,** third vice president of the American Electroplaters' Society, was present as an official observer to report to the A.E.S. executive board on the project. Mr. Wysong has been appointed to study the possibility of broadening the base of the Society to include a strong segment of the membership interested in and concerned with organic finishing.

Leslie Dively, of Cutler-Hammer, Inc., has organized the Organic Division of the Milwaukee Branch, and arranged a series of meetings with speakers and subjects selected according to the interests of members concerned with paint finishing. For the inaugural meeting held on Dec. 7, the speaker was **Ezra A. Blount,** editor of PRODUCTS FINISHING, who spoke on the subject, "A Survey of Paint Application Methods."

MEETINGS of INTEREST to FINISHERS

Feb. 8-9. Second Annual Educational Session, Southeastern Branch, A.E.S., Atlanta-Biltmore Hotel, Atlanta, Ga.

Feb. 16. Annual Educational Session and Dinner Dance, Grand Rapids Branch, A.E.S., Pantlind Hotel, Grand Rapids, Mich.

Mar. 2. Annual Educational Session and Banquet, New York Branch, A.E.S., Hotel Statler, New York, N. Y.

Mar. 9. Annual Educational Session and Dinner Dance, Dayton Branch, A.E.S., Biltmore Hotel, Dayton, Ohio.

March 25-29. Tenth Western Metal Congress and Metal Exposition, Pan Pacific Auditorium, Los Angeles, Calif.

March 30. Fourth Annual Tri-State Regional Meeting, A.E.S., French Lick-Sheraton Hotel, French Lick, Ind.

Mar. 30. Annual Educational Session and Banquet, Rockford Branch, A.E.S., Faust Hotel, Rockford, Ill.

Apr. 27. Milwaukee Branch Annual Meeting, Schroeder Hotel, Milwaukee, Wisconsin.

Apr. 27. Symposium, "Important Engineering Considerations in the Plating Room," Milwaukee Branch, A.E.S., Hotel Schroeder, Milwaukee, Wisconsin.

Apr. 27. Third Empire State Regional Meeting, A.E.S., Grand Ballroom, Onondaga Hotel, Syracuse, New York.

May 12-16. Electrochemical Society Meeting, Statler Hotel, Washington, D. C.

June 16-20. 44th Annual Convention, A.E.S., Sheraton-Mount Royal Hotel, Montreal, Canada.

Partial view of the first meeting held by Organic Division of Milwaukee Branch, A. E. S.

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PRODUCT LITERATURE

45. Finishing Non-Ferrous Parts
Technical literature on improving finishes on non-ferrous parts with Iridite surface conversion coatings. Allied Research Products, Inc., 4004-06 E. Monument St., Baltimore 5, Md.

46. Guide to Better Plating
Technical article tells how to use filters to improve electroplated deposits. Alsop Engineering Co., 1201 Keen St., Millidale, Conn.

47. "Cold" Galvanizing
Information on Dimetcote No. 3, a 100-per-cent-inorganic zinc coating that can be applied to steel with conventional spray equipment, forming a chemical and physical bond with the base metal. Is said to provide excellent resistance to sun, salt water and abrasion. Amercoat Corp., Dept. EA, 4809 Firestone Blvd., South Gate, Calif.

48. Corrosion Preventives
Complete information about Lithoform Z, an amorphous chromate coating for zinc and cadmium; Alodine 1200, an amorphous chromate film for aluminum; and Permadine, a heavy zinc phosphate coating for protection of steel. American Chemical Paint Co., Ambler 14, Pa.

49. Non-Destructive Thickness Testers
Bulletin 2253-G contains full information on the Magne-Gage, an instrument for determining thickness of metal coatings on iron and steel, and on the Filmeter, an instrument for measuring the thickness of non-conducting coatings on non-magnetic base metals. American Instrument Co., Inc., Silver Spring, Md.

50. Copper Plating Problems
Technical assistance on copper plating problems, information on OFHC anodes for copper plating. Metal Sales Dept., The American Metal Co., Ltd., 61 Broadway, New York 6, N. Y.

51. Water-Wash Maintenance Compound
Information on Apex WW water-wash compound, which is added to spray booth water to deflocculate paints. Apex Alkali Products Co., Main & Rector Sts., Philadelphia 27, Pa.

52. Activated Carbon
Technical data on the use of Darco activated carbon as a filter aid in plating. Chemicals Div., Atlas Powder Co., Wilmington 99, Del.

53. Felt Polishing Wheels
Information on a variety of felt polishing wheels. Bacon Felt Co., 447 W. Water St., Taunton, Mass.

54. Paint Pumps
Air-operated paint pumps supply up to eight spray guns with paint at constant pressure, without pulsation. Catalog gives complete information on various models. Balcrank, Inc., Dept. 212, 42 Disney St., Cincinnati 9, Ohio.

55. Airless Spray Painting
The story of airless spray painting, its advantages and applications. Bede Products Corp., Jackson St., Dept. 1, Amherst, Ohio.

56. Abrasive Belts
Information on coated abrasive belts for polishing. Behr-Manning Co., a Division of Norton Co., Dept. PF-2, Troy, N. Y.

57. Spray Booth Maintenance Coating
Information on how to keep spray booth walls easy to clean. Better Finishes & Coatings, Inc., 268 Doremus Ave., Newark 5, N. J.

58. Air-Operated Material Handling Pumps
Bulletin 704 gives detailed information on Binks air-operated material handling pumps for pumping heavy liquids and semi-solids direct from the drum. Binks Manufacturing Co., 3118-40 Carroll Ave., Chicago 12, Ill.

59. Air-Cooled Buffs
Information on air-cooled Ventex buffs. Bison Corp., 1935 Allen Ave., S.E., Canton, Ohio.

60. Degreasing Solvent
Literature explains advantages of Blacosolv degreasing solvent. G. S. Blakeslee & Co., 1844 S. Laramie Ave., Chicago 50, Ill.

61. Tack Cloth
Information on how to improve finishes by wiping surfaces with dust-absorbent tack cloths before paint finishing. Bond Chemical Products Co., 2639 N. Clybourn Ave., Chicago 14, Ill.

62. Pre-Cut Masks
Bulletin 160-C describes and illustrates many shapes and sizes of pre-cut masks for use in selective protection of products during spray painting. W. H. Brady Co., 746 W. Glendale Ave., Milwaukee 9, Wisconsin.

63. Curved-Bar Buffing Compounds
Information on curved-bar buffing compounds for use in automatic buffing machines. Buckingham Products Co., 14100 Fullerton Ave., Detroit 27, Mich.

64. Baking Ovens
Detailed information on Burdett "Radiant Heat" ovens for finishing. Burdett Manufacturing Co., 4916 S. Monitor Ave., Chicago 38, Ill.

65. Chemical-Resistant Coating
Bulletin E-900 gives details on a one-coat heavy-duty protective coating for structural steel, walls and tanks, stacks and other surfaces where resistance to alkalies, acids and solvents is needed. The Ceilcote Co., Inc., 4848 Ridge Rd., Cleveland 9, Ohio.

66. Finger Buffs
Catalog shows various types of Churchill Finger Buffs, which are made with a non-uniform face, so as to eliminate streaking. Geo. R. Churchill Co., Inc., Dept. PF, Hingham, Mass.

67. Cleaning and Painting Machinery
Information on machinery for cleaning and paint finishing metal parts. Cincinnati Cleaning & Finishing Machinery Co., Inc., 2008 Hageman St., Cincinnati 41, Ohio.

68. Roller Coater
Information on production-model roller coater, designed for economical coating of metal, plastics and similar materials. Cincinnati Screen Process Supplies, Inc., 43 Walnut St., Cincinnati 2, Ohio.

69. Quartz Ovens
Information on quartz heaters for baking applications. These heaters are said to emit the part of the spectrum most readily absorbed by paints. The Cleveland Process Co., 1965 E. 57th St., Cleveland 3, Ohio.

70. Six Steps for Better Barrel Finishing
A 20-page booklet includes recommendations on how to obtain better finishes from barrel finishing. Globe Div., Casalbi Co., Wayne St., Jackson, Michigan.

71. Washing Machine Cleaner
Cowles QC Washing Machine Cleaner is said to give improved penetrating, wetting and emulsifying action without objectionable foaming. Cowles Chemical Co., 7016 Euclid Ave., Cleveland 3, Ohio.

72. Hammer Finishes
Information on air-dry and baking hammer finishes. James B. Day & Co., 1872 Clybourn Ave., Chicago 14, Ill.

73. Down-Draft Spray Booth
Information on how down-draft spray booths can improve paint finishing. Despatch Oven Co., 619 S.E. 8th St., Minneapolis, Minn.

74. Zinc Phosphate Coating
Technical information on Paintbond, a zinc phosphate coating that is said to deter rusting if the paint film is scratched and to aid in securing better adhesion. Detrex Chemical Industries, Inc., Box 501, Detroit 32, Mich.

75. Cold Stripper
Data sheet gives details on Electro Cold Stripper, a paint stripper that is said to remove baked finishes, zinc chromate primers, epoxy finishes, and other organic films easily, without employing heat or mechanical action. Sample is available. Allied Finishing Specialties Co., 2641 W. Grand Ave., Chicago 12, Ill.

76. Chromium Plating
Information on chromium plating. Diamond Alkali Co., 300 Union Commerce Bldg., Cleveland 14, Ohio.

77. Methylene Chloride Solvent
"Methylene Chloride, the Better Multipurpose Solvent," a 24-page booklet outlining the wide range of uses for this basic chemical. Contains complete technical information on methylene chloride, which can be used as a vapor degreasing solvent, cold cleaning solvent and in paint removers. Solvents Sales Department, The Dow Chemical Company, Midland, Mich.

78. Silicone-Based Paints
Finishes based on silicones resist the effects of high temperatures, corrosion. Brochure gives full information, including a list of manufacturers who sell silicone-based paints. Dow Corning Corp., Dept. 5012, Midland, Mich.

79. Build Your Own Oven
Literature gives data on interlocking infrared oven sections that can be assembled easily to make an oven or drying panel. DriQuik Div., Dry Clime Lamp Corp., Greensburg, Ind.

80. Technical Data on Trichlorethylene
Bulletin TR-151 contains technical information on trichlorethylene degreasing solvent. Includes table of vapor pressures, list of physical properties, graphs of specific heat and viscosity, information on this material's heat-transfer properties and on safe handling. E. I. duPont de Nemours & Co., Inc., Electrochemicals Dept. PF-2, Wilmington, Del.

81. Electropolishing
Folder contains discussion of electropolishing by the Electro-Glo Process. Electro-Glo Co., 1430 S. Talman Ave., Chicago 8, Ill.

82. Answers to Finishing Problems
Folder "They Are Here" gives answers to 20 difficult finishing problems. Enthone, Inc., 442 Elm St., New Haven 11, Conn.

83. Barrel Finishing Compounds
Chart gives full data and information on the proper compound to use on steel, aluminum, stainless steel, copper alloys, and so on. Esbec Barrel Finishing Corp., 192 Beech St., Byram, Conn.

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84. Spray Masks
A 20-page book illustrates many of the shapes and sizes of parts that can be finished more easily by using Fiore spray masks. These masks are recommended by the manufacturer for use on stampings and die castings that have depressed or raised detail or other irregular surfaces. Wm. M. Fiore, Inc., 269 41st St., Brooklyn 32, N. Y.

85. Buffs and Compounds
Catalog describes and illustrates various cloth and sisal buffs, buffing compounds, contact wheels and abrasive belt grease sticks. Formax Mfg. Corp., Detroit 7, Mich.

86. Radiant Heat
A 20-page book describes applications for radiant heating units. Fostoria Pressed Steel Corp., Dept. 1222, Fostoria, Ohio.

87. pH Papers
Technical data on pH papers, which indicate pH quickly and accurately. Paul Frank, 118 E. 28th St., New York 16, N. Y.

88. Protect Buffing Fixtures
Information folder tells how company's Fusecoating service can increase life of buffing fixtures by protecting them from abrasion. Fusion Metal Coating Co., 25493 W. 8 Mile Rd., Detroit 19, Mich.

89. Weight-Per-Gallon Cups
Folder shows various sizes and types of weight-per-gallon cups, used for measuring specific gravity of solids as well as liquids and pastes. Gardner Laboratory, Inc., P.O. Box 5728 PF, Bethesda 14, Md.

90. Roller Coating Fact File
Information on roller coating equipment for strip, sheets and panels. Gasway Corp., 6463 N. Ravenswood Ave., Chicago 26, Ill.

91. Electric Radiant Immersion Heaters
Glo-Quartz Electric Heater Co. recommends its translucent fused quartz immersion heaters for use in all acid pickling solutions except those containing hydrofluoric acid. Folder gives details, specifications. Glo-Quartz Electric Heater Co., Inc., Willoughby, Ohio.

92. Pre-Plate Finishing
Information on the Spin-Finish process, a recently-introduced method of preplate finishing brass, zinc-base and aluminum die-cast parts. Grav-I-Flo Corp., Dept. PF-1, 400 Norwood Ave., Sturgis, Mich.

93. Spoke-Mounted Buffs
Folder gives details on patented spoke-mounted buffs, tells advantages of this type buff. Guaranteed Buff Co., Inc., 20 Vandam St., New York 13, N. Y.

94. Polishing Equipment
Catalog No. 60 describes and illustrates, gives complete specifications for polishing and buffing lathes; dust collectors; abrasive belt finishing machines and backstands; contour finishing machines; automatic polishing machines; and other equipment. Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich.

95. Germanium Rectifiers
Bulletin GR-100 explains the advantages of the germanium rectifier and its special features, its efficiency, voltage regulation, controls, cooling and electrical protection. Hanson-Van Winkle-Munning Co., Church St., Matawan, N. J.

96. Better Anode Corrosion
Details on the use of the Harshaw Anocap, a rubber electrode assembly protector that is slipped over the anode hook and down over the top of the anode. The Harshaw Chemical Co., 1945 E. 97th St., Cleveland 6, Ohio.

97. Cutting Barrel
Literature describes advantages of Triple Action Barrels. Hartford Steel Ball Co., Inc., 14 Jefferson Ave., West Hartford 6, Conn.

98. Corrosion-Resistant Equipment
Haveg Industries, Inc., Wilmington, Delaware, has announced the publication of a 4-page bulletin on "Teflon" as it applies to their equipment. "Teflon" is a DuPont tradename for tetrafluoroethylene resin. The illustrated brochure, T-50, details "Teflon's" exceptional properties: inertness to practically all chemicals, excellent dielectric properties, resistance to a wide range of temperatures, low friction characteristics, and weather resistance. Haveg "Teflon" products include thin-and-heavy-walled tubing and rod, steel pipe lining, insulated wire, machine parts, and sheet. Halocarbon Div., Haveg Industries, Inc., 914 Greenbank Rd., Wilmington 8, Del.

99. Variable-Speed Tumbling Barrels
Catalog contains specifications and information on various models of variable-speed tumbling barrels. The Henderson Bros. Co., 134 S. Leonard St., Waterbury, Conn.

100. Sheet-Polishing Machinery
Data on abrasive-belt polishing machines. The Hill Acme Co., 1209 W. 65th St., Cleveland 2, Ohio.

101. Tubular Filters
Bulletin 123-1155 contains detailed information on Industrial tubular filters for filtering liquids. Industrial Filter & Pump Mfg. Co., 5904 Ogden Ave., Chicago 50, Ill.

102. P.V.C. Corrosion-Resistant Construction
Bulletin 102 tells how to protect against costly failure due to corrosion by using P. V. C. plating tanks, exhaust systems, stands, trays, drainage troughs, blowers, hoods, tanks, piping, and other parts. Industrial Plastic Fabricators, Inc., Norwood, Mass.

103. Barrel Nickel Brightener
Complete information on Jelco's barrel nickel brightener, which is said to produce a plate with good ductility in hot or cold solutions. Jelco Finishing Equipment Corp., 153 E. 26th St., New York 10, N. Y.

104. Wood Tanks
Specifications, information, descriptions: wood tanks for liquid processing. Kalamazoo Tank & Silo Co., 1571 Harrison St., Kalamazoo, Mich.

105. Finishing Ovens
Complete line of baking and drying ovens is shown in new catalog, "Ovens for Industry." Kirk & Blum Mfg. Co., 3116 Forrer St., Cincinnati 9, Ohio.

106. Metal Cleaning and Preparation
Catalog contains information on various products for cleaning and preparing metal surfaces for finishing. Klem Chemicals, Inc., 14401 Lanson Ave., Dearborn, Mich.

107. Buffing Compound Specifications
Specifications for a variety of greaseless buffing compounds are given in a data sheet which includes information on abrasive sizes, type finish produced by using each, and applications. Atlantic Compound Co., 1860 Baldwin St., Waterbury, Conn.

108. Electroplating Course
Full details on electroplating correspondence course. Joseph B. Kushner Electroplating School, 115 Broad St., Stroudsburg 10F, Pa.

109. Chainless Conveyors
Bulletin LS-1 tells how materials can be transported through finishing operations more easily by using Landahl Chainless Conveyors. The Landahl Conveyor Co., 13142 Athens Ave., Cleveland 7, Ohio.

110. Finishing Ovens
Catalog describes and illustrates various types and sizes of paint-baking ovens. The Lanly Co., 760 Prospect Ave., Cleveland, Ohio.

111. Automatic Plating
Brochure gives detailed information on the Cycleflex, Lasalco's automatic plating and anodizing machine that can be easily modified to accommodate a change in cycle. Lasalco, Inc., 2820 LaSalle St., St. Louis 4, Mo.

112. Anode Information
Technical information on copper, tin, cadmium, nickel, zinc and lead anodes of high purity, for electroplating. R. Lavin & Sons, Inc., 3426 S. Kedzie Ave., Chicago 23, Ill.

113. Enamel Stripper
Synstrip No. 400, a liquid developed especially for stripping synthetic resin-based baked enamels, baking Japans and many air-dried finishes. Lea Manufacturing Co., 16 Cherry Ave., Waterbury 20, Conn.

114. Primer
Data on Zinoxide, a primer that is recommended for protection of steel products. Lowe Brothers, 424 East Third St., Dayton 2, Ohio.

115. Complete Finishing Systems
Information on the advantages of completely integrated, conveyorized paint finishing systems is given in catalog A-657, which includes descriptions of cleaning and pickling equipment, spray booths, flow coaters, dip coaters, drying and baking ovens, other finishing equipment. The R. C. Mahon Co., Detroit 34, Mich.

116. Chemical Polish
A chemical polish for steel, formulated to produce a bright finish on steel articles by simple immersion, is described in Technical Data Sheet No. 32, a two-page usage and instruction sheet. MacDermid Inc., Waterbury 20, Conn.

117. Cleaning Compound Survey
Bulletin No. 73 surveys line of cleaning compounds, describes effectiveness of each. Industrial Cleaning Div., Magnus Chemical Co., Inc., 208 South Ave., Garwood, N. J.

118. Paint-Handling Equipment
Form 35-12 is a 31-page catalog of painting equipment. Includes complete information on and specifications for fluid pumps, spray guns, "Flo-Trol" surge eliminators, air and fluid hoses, air-line accessories and agitators. Stewart-Warner Corp., Alemite, Dept. D-27, 1830 Diversey Parkway, Chicago 14, Ill.

119. Pearl-Like Luster
Information on Nacromer, a material that, when added to regular organic coating materials, produces a pearl-like-luster in the finish. Mearl Corp., Waverly Pl., New York 14, N. Y.

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120. Paint Mixers
Literature describes and illustrates paint mixer that will restore original consistency of paint without opening the can. Miracle Paint Rejuvenator Co., 127 E. 9th St., St. Paul 1, Minn.

121. Alkaline Deruster
Data sheet gives technical information on Alkaline Deruster No. 2, a non-electrolytic compound for removing rust from ferrous metals. Mitchell-Bradford Chemical Co., Wampus Ln., Milford, Conn.

122. Drum Rotators
Single and double stationary drum rotators for loads up to 2,000 pounds are described in Bulletin No. 2-55. Morse Manufacturing Co., Inc., 762 W. Manlius St., East Syracuse, N. Y.

123. Spray Nozzles
Catalog 24 contains complete information on many types and sizes of nozzles. Spraying Systems Co., 3229 Randolph St., Bellwood, Ill.

124. Silk Screens and Inks
Data on silk screens and silk-screen inks. The Naz-Dar Co., 461 Milwaukee Ave., Chicago 10, Ill.

125. Dust Collectors
Information on water-type duct collectors for removing dust from air. Newcomb-Detroit Co., Inc., 5761 Russell St., Detroit 11, Mich.

126. Cold Spray Cleaning
Discussion of the advantages of Jet 50, a non-foaming spray cleaner that can be used at room temperature. Northwest Chemical Co., 9310 Roselawn, Detroit 4, Mich.

127. Barrel Finishing Media
Information on the advantages of Norton Alundum Tumblex "S" Spheres in barrel finishing. Norton Co., Worcester 6, Mass.

128. Rinse Aid
Data sheet tells about Oakite Rinsite, a material that is added to rinse water to prevent water spotting and retard rusting. Oakite Products, Inc., 20 Rector St., New York 6, N. Y.

129. Isophthalic-Based Paints
Information on the advantages of isophthalic-based industrial finishes. Oronite Chemical Co., 200 Bush St., San Francisco 20, Calif.

130. Paint Pumps
Paasche paint pumps deliver paint directly from the original drum to one or more spray guns. Paasche Airbrush Co., a Division of Cline Electric Mfg. Co., 1909 W. Diversey Parkway, Chicago 14, Illinois.

131. Automatic Polishing Machines
Data on automatic machines for buffing, polishing and deburring. Packer Machine Co., Meriden, Conn.

132. Blast Cleaning
Bulletin 1403 gives details on the Hydo-Finish method of blast cleaning. Pangborn Corp., 5000 Pangborn Blvd., Hagerstown, Md.

133. Blackening Salt
Bulletin H-16 contains full information on the Park 290 process for applying a rust-resistant black finish to parts. Park Chemical Co., 8074 Military Ave., Detroit 4, Mich.

134. Finishing Systems
Information on paint finishing systems, components: spray booths, washing equipment, drying and baking ovens, dust collecting systems, conveyorized systems. Peters-Dalton, Inc., 17908 Ryan Rd., Detroit 12, Mich.

135. Work Gloves
Catalog shows a variety of work gloves, designed for protecting hands in many types of service. The Pioneer Rubber Co., 285 Tiffin Rd., Willard, Ohio.

136. Thermosetting Acrylic Enamels
Information on recently introduced Duracron thermosetting acrylic enamels, which are said to be suitable for finishing refrigerators, air conditioners, home laundry equipment, ranges, and other products where a baking enamel is used. Pittsburgh Plate Glass Co., Industrial Sales Div., 1 Gateway Center, Pittsburgh, Pa.

137. Degreasers
Catalog describes and illustrates line of degreasers, including laboratory, ultrasonic and conveyorized types. Ramco Equipment Corp., 811 Edgewater Rd., New York 59, N. Y.

138. Electrostatic Painting
Data on Ransburg electrostatic painting process. Ransburg Electro-Coating Corp., Indianapolis 7, Ind.

139. Germanium Rectifiers
Catalog gives data on various sizes and types of germanium rectifiers. Rapid Electric Co., 2877 Middletown Rd., New York 61, N. Y.

140. Silica-Free Blast Grit
Black Beauty Blast Grit is silica-free (thus safety hazard to personnel is reduced). Material is said to be fast cutting and free flowing in any kind of weather; to leave less dust and no corrosive deposits on work; and to be completely inert. H. B. Reed & Co., Inc., 6618 Kennedy Ave., Hammond, Ind.

141. Rhodium Electroplating Solutions
Information on the advantages of rhodium plating switches, wave guide parts and other electrical equipment. Sigmund Cohn Mfg. Co., Inc., 121 S. Columbus Ave., Mount Vernon, N. Y.

142. Contact Wheels
Folder describes and illustrates advantages of the E-Z Cut Wonder Wheel, a recently introduced perforated contact wheel. Mermac Products, Inc., 515 N. Racine Ave., Chicago 22, Ill.

Classified Advertising

Services—Position Opportunities—Used Machinery and Equipment. For rates and other information address: **PRODUCTS FINISHING, 431 Main St., Cincinnati 2, Ohio**

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REPRESENTATIVES

Distributors, sales and service representatives, and manufacturers agents wanted by leading eastern chemical manufacturer, to distribute and sell complete line of metal finishing compounds: alkaline cleaners and solvents; plating solutions, additives and finishes; phosphating compounds; paint and metal strippers. Several territories open. Excellent opportunities. Please give complete details. All replies kept in confidence. Address Box 21, c/o Products Finishing, 431 Main St., Cincinnati 2, Ohio.

OPPORTUNITY SECTION

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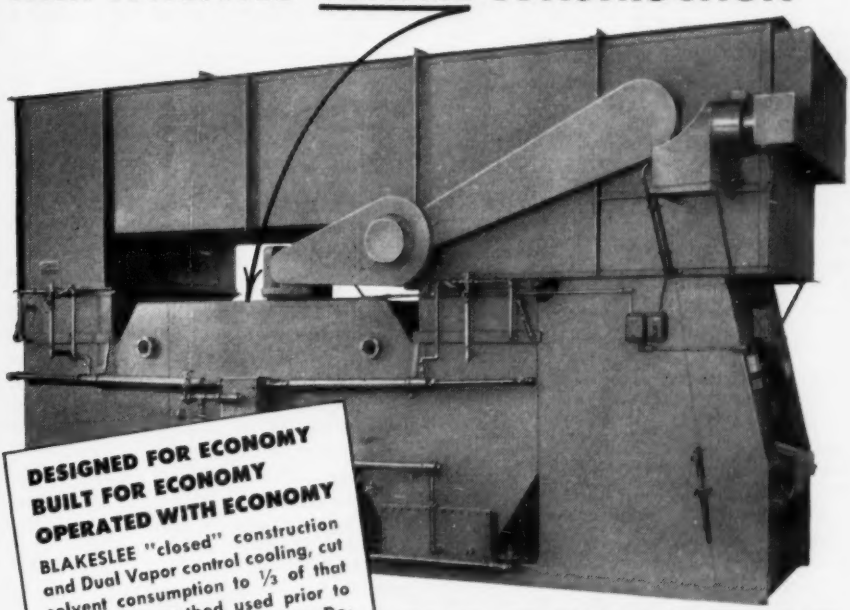

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For more data circle **249** on Reader Service Card

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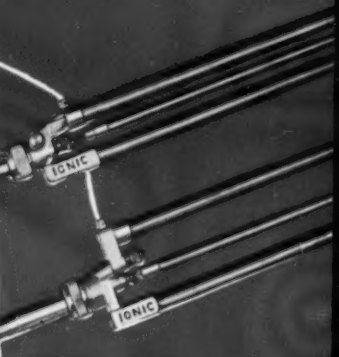

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